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REQUIRED READING FOR FEBRUARY.

HOW ENGLISH DIFFERS FROM OTHER LANGUAGES.

BY RICHARD GRANT WHITE.

It has occurred to me that some readers of THE CHAUTAUQUAN may have been disappointed in these articles because in their judgment they have been thus far not sufficiently "practical." Many people, far too many, desire chiefly to find some short, straight road to knowledge. They like to have some man who is called an "authority" upon a certain subject cut his knowledge up into small parcels or "chunks" of convenient size, and arrange them with labels, alphabetically, in an article or a book, so that they may be referred to at need, and followed like a recipe for making a pudding, and with as little thought. But there are no such recipes for acquiring real knowledge. In this way an acquaintance with facts may be made which, used blindly, may prove of some immediate service, and may not. Nothing, however, learned in this perfunctory way is worthy of the name of knowledge. For it is a barren process; it really teaches nothing; it profits nothing; it does nothing for the education of the person by whom it is adopted. Real knowledge comes only by a thoughtful learning of the relations of facts. True as to all subjects, this is eminently true as to language; because, language is eminently a subject of relations. There is hardly a word that we use which has not relations to other words, and other forms of speech; relations historical, spiritual, almost moral; to set forth which in detail would furnish occasion for a little essay. The mere learning to speak and to write a language is only a matter of memory and practice; nothing more. It is child's work, and it is continually done, and is best done, by children. A man may speak and write English, French, German or Latin with unexceptionable correctness and fluency, and yet know no more about that language than a well instructed parrot would which had been taught to use all the words which he uses. His study would not be a study of language; and in that which he had painfully learned he might be easily and unconsciously surpassed by a child who had never studied at all. Now what I hope to do here is to help my readers to some knowledge of the English language, in so far as my own imperfect acquaintance with my mother tongue and its literature will enable me to do so.

We have seen what English is, of what stuff it is made, how

it came by its present compositeness of substance; how it became strong, and full, and flexible, and fervent; let us now look a little into its structure, *i. e.*, the way in which it is put together, in doing which we shall see by comparison how it differs from other languages. This matter of structure, the formation of the sentence, is the distinctive trait of a language. Mere words are not the essential difference between languages. Many words are common (with slight phonetic variation) to all the languages of the Aryan or Indo-European stock, as we have already seen. Multitudes of words have been adopted into all the modern tongues from other languages ancient and modern, dead and living, as most of the readers of THE CHAUTAUQUAN know. The bulk of English dictionaries like Webster's and Worcester's is composed of words which are of Latin, Greek, French or Italian origin, and which indeed are essentially the same words in all these languages; their unlikeness being merely a phonetic variation, mostly caused by difference in pronunciation, or change in termination. For example, *flower* is in Latin *flos* (genitive *floris*), in Italian *fiore*, in French *fleur*, in Spanish *flor*; each language having somewhat changed the sound of the word, according to rules or habits which are loosely called laws; but the word is in all essentially the same. A sentence—many sentences—might be written in English, Latin, French, Italian, Spanish and German, in which all the words of subject-matter (all but verbs like *have* and *be*, and prepositions and conjunctions) should be essentially the same, and so like that an intelligent person with some faculty for language, and who understood any one of these languages, could apprehend the meaning of any one of the supposed sentences with little difficulty. And yet the sentences would be respectively English, Latin, French, and so forth. Why and how? It is to the reason of this, that is the why and the how of it, that we shall now give a little time and attention.

The most important and significant distinction between languages is in their grammar; that is, in the structure of the sentence. In the languages mentioned above the greatest unlikeness in this respect is manifested in English, Latin and German, or to name them in their order of grammatical im-

portance, Latin, German and English. The term "grammar" has two senses; one large and vague, and called by some "philosophical" or "scientific" (phrases commonly used with a deplorable union of pretension and looseness), which includes all that relates to the history, the substance and the structure of a language; the other much narrower and simpler; the sense implied when the phrases "good grammar" and "bad grammar" are used. To this sense I shall here confine myself, and shall here repeat a definition of grammar which I have given before.*

Grammar concerns the forms of words and their dependent relations in the sentence.

To illustrate this: It is "bad grammar," ludicrously, monstrously bad grammar, to say in Latin, *Nos habeo bonus mater*; and yet these Latin words, literally and simply translated in their order, mean, We have a good mother, which in English is perfectly "good grammar." In the Latin (to call it Latin) every word is wrong; in English every word is right. The reason of this is that in Latin words change their forms according to their relations, not according to their essential meaning. *Habeo* means have; but it can not be used to express a plural having; that requires for *we* (*nos*) the form *habemus*. *Bonus* means good; but it can not be used to express the goodness of a feminine object, for which the form *bona* is required. Yet further: Even *bona* can not be used to qualify a noun which is the object of a verb, or, as we say, in the objective (or accusative) case, for which the form *bonam* is required. *Mater* means mother, but as the object of the verb *have*, *mater* must change its form to *matrem*. By these required changes of form the Latin sentence becomes, *Nos habemus bonam matrem*, which is "good grammar," although poor Latin, but which, after all the changes, means simply, We have a good mother; nothing more nor less. Yet further: The sentence, as written above, although grammatical, is poor Latin because it is at variance with the habit, or as it is sometimes called the spirit, or even the genius, of the Latin language. In Latin the word *habemus* (although like *habeo* it means simply, have) is so positively and distinctively limited in use to the first person plural that the pronoun *nos*—we—is quite superfluous, and is never used unless with an emphatic purpose; *habemus*, without the *nos*, means, we have. Moreover it was the Latin habit of speech to place the object generally before the verb; and good Latin for, We have a good mother would be, *bonam matrem habemus*—i. e., A good mother we have, or rather (literally) Good mother we have; for the Latin strangely has no articles, or none which correspond to our *an* (or *a*) and *the*, and which may be translated by *them*.

This illustration, brief and simple although it be, is sufficient, I think, to make the great and essential distinction between English and Latin, and measurably between English and all other modern civilized tongues, clear to the readers of these articles. The essential difference is not one of words but of the construction of the sentence. In Latin and other languages that construction depends not upon the thought and the meaning of the words, but upon the forms of the words—their inflections. Now the distinctive trait of English is that it is a language without inflections—not absolutely so, but so to all intents and purposes; and, being without inflections, it is therefore without grammar, which, as we have seen, concerns the forms of words and their dependent relations in the sentence. *Nos habeo bonus mater* is bad grammar because the forms of the words are incorrect according to the usage of the Latin language. *Bonus* means good; but for the expression of the quality good in its barest, simplest idea *bonus* takes on five forms in Latin; *bonus* for masculine goodness in the singular, *bona* for feminine singular, *bonum* for neuter singular, *boni*, masculine plural; *bonae* feminine plural, *bona* neuter

plural. To be brief; for use in various relations, this word *bonus* takes on no less than thirteen forms, of which more need not here be given. *Mater*—mother—takes on eight of these forms or inflections, which are called cases. But in English *good* has but one form. Singular, plural, masculine, feminine, neuter, nominative, possessive, dative, objective, vocative—in whichever of these senses the word which it qualifies is used it has but one form—*good*. Thus it is with all English adjectives, and with articles (*an* and *the*) which are a kind of adjective. In all other languages adjectives and articles have various forms adapted to the various numbers, genders, and cases of nouns. In English nouns have two cases (strictly but one, the nominative not being a true case), the second of which is the possessive: e. g., mother's; and they have a singular and a plural form, e. g., mother, mothers.

In other languages the verb is inflected into a multitude of forms, expressive of voice (active and passive), person, number and time of action. In English, the variations of form in the verb are very few. There is no passive voice. The English has but one passive verb; the obsolete *hight*, which means, is called. As to time, there are only the forms of present and perfect, e. g., *love* and *loved*; as to person and number, inflections only in the present tense, e. g., *love*, *lovest*, *loves*; and of these one, *lovest*, is obsolete, or very obsolescent. To these inflected forms there is to be added only the present or indefinite participle *loving*. Beyond this there are in English, by way of inflection, only the cases of the pronouns, e. g., *he*, *his*, *him*, *who*, *whose*, *whom*, etc. And it is here to be remarked that almost all the questions of "good grammar" and "bad grammar" that arise in English relate to the use of pronouns. (For surely we may leave out of consideration here the difficulties of those who say *I see* or *I seen him*, for *I saw him*, or *I have went* for *I have gone*, and the like.) Here, therefore, we have set forth, although very succinctly, the distinctive grammatical position of the English language.

That position is briefly this: In English words have (with the few exceptions mentioned above) but one form; and as grammar is concerned only with the formal relations of words in the sentence, English has no grammar. Among languages it is the grammarless tongue.

Let us further illustrate this point by a brief consideration of a subject which is very perplexing to the learners of a foreign language, and which is not less so to the historical students of language in general; a subject which, I believe, has never been explained by the latter with any semblance of satisfaction—gender. All other languages are infested with gender; in English there is no such distinction in words as that of gender. English, it should be needless to say, has words to express difference of sex; that no language can fail to do, for failing in that, it would not communicate the facts and thoughts of every-day life. But grammatical gender has no relation to sex, no relation to the essential characteristics of things. Gender, grammatical gender, is an attribute of words. He creatures are male, she creatures female, and the words which are their names are generally (but not universally) masculine and feminine in all languages. Things neither male nor female are neuter, which means merely, neither. But this is not gender. Gender, as I have said before, is an attribute of words; of words only. For example, the Latin word *penna*—a pen, or quill, is feminine; in French the word *table*—table, is also feminine. It is needless to say that there is no question as to the sex of a pen, or of a table; nor is there any quality in either of those objects which has a sexual trait or characteristic. In each case it is the word which is of the feminine gender; and in all, or almost all, languages but English all or almost all words are afflicted with this mysterious pest of gender. How annoying and perplexing it is, and how it complicates the use of language, and makes the acquisition of foreign languages difficult, no student needs be told. For it creates an ever present and far-reaching perplexity. It dominates the construction of

* "Every Day English," chapter xvii.

the sentence and binds it up in bonds of iron. For every adjective, and in French and other languages having articles, every article which is applied to a noun must be of the gender of that noun. You can not say in Latin *bonus penna*, a good pen, without "bad grammar," you must say *bona penna*. You can not say in French *un mauvais table*, a bad table, but must say *une mauvaise table*; nor *le table*, but *la table*—although both mean the table, nothing more nor less. The absurdity of this is made very apparent when a feminine word is applied to a male object. Thus *majesté*—majesty, is feminine; but when a king is called your majesty, the words *sa majesté* (her majesty) are used because the word *majesty* is feminine; and instead of saying he (*il*) did thus or so, we must say she (*elle*) did it, although she was a man; the reason being that the word *majesté* is feminine.¹ All this has been swept clean away in English, in which language there is no distinction of gender but only that of sex: male creatures, or those so personified, are masculine, female, feminine; those which have no sex are neuter; and there an end. English is eminently a language of common sense; and one marked evidence of this trait is its freeing itself entirely from the nuisance of grammatical gender along with other grammatical trammels.²

It has freed itself from those trammels; for at one time it was hampered by them sorely. Anglo-Saxon, or Old English, was an inflected speech, and was tied up in the bonds of gender and other grievous grammatical tetherings. This was long ago; but it was after Britain had become England, or Engleland, the land of the English people and of English speech. When our English forefathers were little better than semi-savages, bloody, barbarous, heathen, worshiping Thor and Woden, and in a state of benighted ignorance of which it would be difficult for those of my readers who have not tried to pierce the darkness of that historical past to form even an approximate notion—at this time, and in this social and intellectual condition of the speakers of the English language, it was copiously provided with grammar. Even Greek had not much the better of it in this respect. It had not only forms for person and number, but gender forms, and cases galore.³ Take, for example, a word which was English a thousand years ago, just as it is to-day, *man*. This simple word has undergone no change in all the thousand years, unless by losing a little breadth of sound; it having probably been pronounced *mahn*, of which sound the rustic *mon* of provincial England is a relic and representative. But *man* could not be used pure and simple, under all circumstances and in all cases, in the English of that day any more than, as we have seen, *mater* and *bonus* could be so used in Latin. There was the nominative singular—*man*, simply; the genitive *mannes*—of a man; the dative *men*, to or for a man; accusative *mannan*—a man objectively; nominative plural *men*; genitive *manna*—of men, or men's; and a dative *mannum*—to or for men.

Of all these various forms or cases of *man*, the language has freed itself, excepting the genitive singular, *mannes*, and the nominative plural, *men*. These have been retained, not by accident, or neglect, but at the dictate of common sense, because convenience and intelligibility required their use. It was found necessary to distinguish the plural from the singular; and the genitive or possessive idea from the simple and absolute; but *man* as a dative or accusative singular, and *men* as the same in the plural, were found quite as useful and convenient as the old inflected forms; and therefore (or therefore finally and in a great measure) the latter were discarded. The genitive or possessive has been retained; but it has slightly changed its form; by contraction only, however; *mannes* has become *man's*. The old sign of the possessive was *es*; and it is this, and not the pronoun *his* (as once was supposed) that is represented in our possessive case, in which the apostrophe merely marks the elision of the old *e*. There is really no good reason for the use of the apostrophe, none which would not apply equally to many other cases in which no elision is marked. In

the Elizabethan era it was not used, and with no consequent confusion. Maas folly, the boys hat, Johns coat, are as clear in meaning as they would be with the apostrophe; and the possible confusion of the possessive with the plural, as in that fancy of the girls, and that fancy of the girl's is so remote and so very unlikely as to be worthy of little consideration.

As to English in its earliest form (Anglo-Saxon) suffice it here to say in this regard that it was so largely an inflected language, that is, it varied the forms of its words so numerously to express time of action, mode of action, person, number, case, and gender, that it is in this respect almost as unlike modern English as Greek is, and is little less difficult of acquirement to the English speaking student of to-day than Latin. Its very articles had gender forms as well as case forms; and, moreover, like the Mæso-Gothic and like the Greek it had preserved the old dual number (for the expression of a plural of two) although only in the personal pronoun. A comparative examination of the pronoun of the first person and of the present tense of the verb *to have* in their ancient and modern forms will show the mode and the reason of the changes by which English has assumed its present character.

OLD ENGLISH PRONOUN OF THE FIRST PERSON.

SINGULAR.	DUAL.	PLURAL.
N. <i>ic</i> , I.	<i>wit</i> , us two.	<i>we</i> , we.
G. <i>min</i> , of me.	<i>uncer</i> , of us two.	<i>ure</i> , of us.
D. <i>me</i> , to, for, with me.	<i>unc</i> , to or for us two.	<i>us</i> , to, for, with us.
A. <i>me</i> , me (objectively).	<i>unc</i> , us two.	<i>us</i> , us.

The dual form has been swept away entirely as needless, and worse, cumbrous and perplexing; but it will be seen that we have retained every one of the other forms. *ic* has become I; *mine* is still the possessive of I; *me* is still not only the objective form of the first person, but the dative, "make me a hat," or "buy me a horse," being merely "make a hat to or for me," or "buy to or for me a horse." *We* and *us* will be recognized at sight, and *ure* has only changed its pronunciation from *oor* to *our*. These forms have been retained in our modern English partly because a pronoun is the most ancient of indestructible parts of speech,* but chiefly because of their usefulness, their convenience. A brief consideration of them by the intelligent reader will make this so plain that more need not be said on the subject.

Now let us see the unlike fate of the verb *to have*. This will be more readily apparent if we look at it in Latin, in French, and in English (it is actually the same word in all these languages, with slight phonetic variation); and we shall thus also have another demonstration of the manner in which English differs from other languages.

SINGULAR.			PLURAL.		
Latin.	French.	English.	Latin.	French.	English.
1. <i>habeo</i> .	<i>j'ai</i> .	I have.	<i>habemus</i> .	<i>nous avons</i> .	we have.
2. <i>habet</i> .	<i>tu as</i> .	thou hast.	<i>habetis</i> .	<i>vous avez</i> .	you have.
3. <i>habet</i> .	<i>il a</i> .	he has.	<i>habent</i> .	<i>ils ont</i> .	they have.

It will be seen at once that the Latin and the French have each a special plural form, and also three forms for the three persons of that number. English has swept away this plural form entirely, and uses for the plural in all its persons the simple *have* of the first person singular. The form of the second person singular has also virtually disappeared; the simple *have* appearing in its substitute, *you have*. Whether the form of the third person singular will ever follow the other is doubtful; but it is certain that our language has lost nothing in clearness, and has gained much in simplicity by the doing away with all the formal superfluity by which the old numbers and persons were distinguished.

* Certain uneasy manipulators of speech have lately set themselves at making an impersonal English pronoun. Vanity of vanities! Make a pronoun? As well undertake to build a pyramid. Better. There is not a pronoun in use that was not hoary with age before the first stone of Keops was laid.

This simplification of the forms of words is not absolutely confined to the English language. It appears to be a tendency of language; a modern tendency, using modern in its widest sense. For this movement toward simplification appears in the Latin, in the Romance tongues formed from it, and in the Gothic languages. In none, however, does this simplification, this destruction of superfluous forms, approach, even remotely, that which has taken place in English. So different, indeed, are the results, that the process seems, if not of another kind, at least as having another motive. For example, all the other languages retain the absurdity of gender. In this respect German is no better than French. And let me here remark that the common notion that English and German are most alike of all modern languages, and most nearly akin, is altogether wrong. On the contrary, English and German are very unlike; the most unlike of all the Gothic (or Teutonic) languages. English and French have much greater likeness, both in substance and in structure. There are more words now common to the English language and to the French than to English and German; and the syntax of the French language is very much more like that of the English, than German syntax is. A French sentence literally translated in the French order of the words is, in most cases, so like an English sentence that it requires little change to be correct English, while a similar translation of a German sentence produces an effect both harsh and ludicrous.

The simple form of the English language is the result of two causes. Of these the first in order of time was the conflict and subsequent mingling of the Old English (Anglo-Saxon) and the Norman-French. When two languages are thus brought together and are both spoken by two peoples, all that is superfluous in the words of each soon begins to disappear. Each people grasps only the essential in the foreign words which it is obliged to use; each soon adopts the curtailed form of its speech used by the neighbors of another race and speech with whom it is obliged to live in daily communication; and ere long a composite speech of simpler forms takes the place of two tongues—each of which was more complex in structure, but less rich and varied in substance. By this process, out of Anglo-Saxon and Norman-French, came modern English. But not only thus. Other languages have mingled, but never before with such a result. Never was there in any other amalgamation, such an esurience of superfluous form; a devouring which has to all intents and purposes made English a language of one-formed words, and therefore a language practically without formal grammar. In this characteristic is its strength; from this comes its flexibility, its adaptation to all the needs of man, the highest and the low-

est. Hence it is eminently the language of common sense as well as of the highest flights of poetry. The English mind saw that it was not necessary to have two words to express possession in the singular and in the plural; that *good* as clearly expressed the goodness of a woman as of a man, and that of a dozen men as well as that of one; that pens and tables needed no distinction of gender in their names; in fact that nothing was gained, and that much was lost by these grammatical excrescences; and therefore they were done away with very thoroughly, almost entirely. The process was pretty well completed some three hundred years or more ago; since when no noteworthy changes in this respect have taken place. But it is still going on, although so slowly as to be perceptible only on close examination. All the little specks of grammar that English has are mostly to be found in the pronouns, as I have before remarked. In the use of one of these a change is very gradually taking place. *Whom* has begun to disappear, began, indeed, a long time ago; but of late is fading somewhat more perceptibly. For example: all speakers of good English say, The man whom I saw, not The man who I saw; *whom* being the objective form of *who*.

But now-a-days not one person in a hundred of the best bred and best educated speakers of English asks, Whom did you see? but, *Who* did you see? Indeed, the latter form of the question may be regarded almost as accepted English. Yet in the latter phrase, as in the former, the pronoun is the object of the verb *see*, and should strictly have the objective form. But Whom did you see? would now sound very formal and precise, almost priggish, like *gotten* instead of *got*. When, however, the pronoun is brought in direct contact with the verb, as in the phrase, The man whom I saw, we shrink from insult to the little semblance of grammar that our language possesses, and give the word its objective form. The time will probably come, although it may be remote, when *whom* will have altogether disappeared. As to *gotten*, its use is now so confined to the over-precise in this country as to make it almost an Americanism. Its disappearance from our language in England is also one of the evidences of the process of simplification which is still slowly going on. Another, which has taken place within the memory of the elder living generation, is the disappearance of the subjunctive mood, which is now obsolete, or so very obsolescent as to be met with very rarely. But thirty-five or forty years since correct writers used this mood, and wrote, for example, *if he go* instead of *if he goes*. Of the effect of this grammarless condition of the English language we may see something in a subsequent article.

SUNDAY READINGS.

SELECTED BY CHANCELLOR J. H. VINCENT, D.D.

[February 1.]

I find David making a syllogism, in mood and figure, two propositions he perfected.

(Ps. lvi.) 18. If I regard iniquity in my heart, the Lord will not hear me.

19. But verily God hath heard me, he hath attended to the voice of my prayer.

Now I expected that David should have concluded thus: Therefore I regard not wickedness in my heart.

But far otherwise he concludes:

20. Blessed be God, who hath not turned away my prayer, nor his mercy from me.

Thus David hath deceived, but not wronged me. I looked that he should have clapped the crown on his own, and he puts it on God's head. I will learn this excellent logic, for I

like David's better than Aristotle's syllogisms, that, whatsoever the premises be, I make God's glory the conclusion.

Young King Jehoshaphat had only a lease of piety, and not for his own, but his uncle's life (2 Kings xii:2): He did that which was right in the sight of the Lord all his days, wherein Jehoshaphat the priest instructed him.

Jehu was good in the midst of his life, and a zealous reformer to the utter abolishing of Baal out of Israel, but in his old age (2 Kings, x:31) he returned to the politic sins of Jeroboam, worshipping the calves in Dan and Bethel.

Manasseh was bad in the beginning and middle of his life, filling Jerusalem with idolatry; only toward the end thereof, when carried into a strange land, he came home to himself and destroyed the profane altars he had erected.

These three put together make one perfect servant of God.

Take the morning and rise with Jehoash, the noon and shine with Jehu, the night and set with Manasseh. Begin with youth-Jehoash, continue with man-Jehu, conclude with old-man-Manasseh, and all put together will spell one good Christian, yea, one good, perfect performer.

Constantly pray to God, that in his due time he would speak peace to thee. * * * Prayers negligently performed draw a curse, but not prayers weakly performed. The former is when one can do better, and will not; the latter is when one would do better, but, alas! he can not. * * *

Be diligent in reading the word of God, wherein all comfort is contained. * * * Thou hast a great journey to go, a wounded conscience has far to travel to find comfort (and though weary shall be welcome at his journey's end), and therefore must feed on God's word, even against his own dull disposition, and shall afterward reap benefit thereby. * * *

Be industrious in thy calling; I press this the more because some erroneously conceive that a wounded conscience cancels all indentures of service, and gives them (during their affliction) a dispensation to be idle.

Let none in like manner pretend that (during the agony of a wounded conscience) they are to have no other employment than to sit moping, to brood over their melancholy, or else only to attend their devotion; whereas a good way to divert or assuage their pain within is to take pains without in their vocation. I am confident, that happy minute which shall put a period to thy misery shall not find thee idle, but employed, as some ever secret good is accruing to such who are diligent in their calling.—*Fuller*.¹

[February 8.]

The Deity is intended to be the everlasting field of the human intellect, as well as the everlasting object of the human heart, the everlasting portion of all holy and happy minds, who are destined to spend a blissful but ever active eternity in the contemplation of his glory. * * * He will forever remain "the unknown God." We shall ever be conscious that we know little compared with what remains to be known of him; that our most rapturous and lofty songs fall infinitely short of his excellence. If we stretch our powers to the uttermost, we shall never exhaust his praise, never render him adequate honor, never discharge the full amount of claim which he possesses upon our veneration, obedience, and gratitude. When we have loved him with the greatest favor, our love will still be cold compared with his title to our devoted attachment. This will render him the continual source of fresh delight to all eternity. His perfection will be an abyss never to be fathomed; there will be depths in his excellence which we shall never be able to penetrate. We shall delight in losing ourselves in his infinity. An unbounded prospect will be extended before us; looking forward through the vista of interminable ages we shall find a blissful occupation for our faculties, which can never end; while those faculties will retain their vigor unimpaired, flourish in the bloom of perpetual youth, * * * and the full consciousness remain that the Being whom we contemplate can never be found out to perfection * * * that he may always add to the impression of what we know, by throwing a veil of indefinite obscurity over his character. The shades in which he will forever conceal himself will have the same tendency to excite our adoring wonder as the effulgence of his glory; the depths in which he will retire from our view, the recesses of his wisdom and power as the open paths of his manifestation. Were we capable of comprehending the Deity, devotion would not be the sublimest employment to which we can attain. In the contemplation of such a Being we are in no danger of going beyond our subject; we are conversing with an infinite object, * * * in the depths of whose essence and purposes we are forever lost. This will probably give all the emotions of freshness and astonishment to the raptures of beatific vision, and add a de-

lightful zest to the devotions of eternity. This will enable the Divine Being to pour in continually fresh accessions of light; to unfold new views of his character, disclose new parts of his perfection, open new mansions of himself, in which the mind will have ample room to expatiate. Thus shall we learn, to eternity, that, so far from exhausting his infinite fullness, there still remain infinite recesses in his nature unexplored—scenes in his counsels never brought before the view of his creatures; that we know but "parts of his ways;" and that instead of exhausting our theme, we are not even approaching nearer to the comprehension of the Eternal All. It is the mysteriousness of God, the inscrutability of his essence, the shade in which he is invested, that will excite those peculiar emotions which nothing but transcendent perfection and unspeakable grandeur can inspire.—*Robert Hall*.²

[February 15.]

We need not go far to seek the materials for an acceptable offering; they lie all around us in the work of our callings, in the little calls which divine Providence daily makes to us, in the little crosses which God requires us to take up, nay, in our very recreations. The great point is to have the mind set upon seeing and seeking in all things the service of Christ and the glory of God, and, lo! every trifling incident which that mind touches, every piece of work which it handles, every dispensation to which it submits becomes a sacrifice.

"If in our daily walks our mind
Be set to hallow all we find,
New treasures still of countless price
God will provide for sacrifice.
We need not bid for cloistered cell
Our neighbor and our work farewell,
Nor strive to wind ourselves too high
For sinful man beneath the sky;
The trifling round, the common task
Will furnish all we ought to ask,
Room to deny ourselves—a road
To bring us daily nearer God."

If we allow the beauties of nature to raise our heart to God, we turn that into a sacrifice. If cross incidents, which could not be avoided or averted, are taken sweetly and lovingly, out of homage to the living will of God, this, too, is a sacrifice. If work be done in the full view of God's assignment of our several tasks and spheres of labor, and under the consciousness of his presence, however secular in its character, it immediately becomes fit for presentation on the altar. If refreshment and amusement are so moderated as to help the spirit instead of dissipating it, if they are to be seasoned with the wholesome salt of self-denial (for every sacrifice must be seasoned with salt) they, too, become a holy oblation. If we study even perverse characters, with a loving hope and belief that we shall find something of God and Christ in them, which may be made the nucleus of better things, and instead of shutting ourselves up in a narrow sphere of sympathies, seek out and try to develop the good points of a generally uncongenial spirit; if we treat men as Christ treated them, counting that somewhere in every one there is a better mind, and the trace of God's finger in creation, we may thus possibly sanctify an hour which would else be one of irksome constraint, and after which we might have been oppressed with a heavy feeling that it had been a wasted one. If a small trifle, destined to purchase some personal luxury or comfort, be diverted to a charitable and religious end, this is the regular and standing sacrifice of alms, recognized by the Scripture and the Liturgy. And finally, if we regard our time as, next to Christ, and the Holy Spirit, the most precious gift of God; if we gather up the fragments and interstices of it in a thrifty and religious manner, and employ them in some exercise of devotion or some good and useful work, this, too, becomes a tribute which God will surely accept with complacency, if laid upon his altar and

united by faith and a devout intention with the one Sacrifice of our dear Lord.

Yes; if laid upon his altar; let us never forget or drop out of sight that proviso. It is the altar, and the altar alone, which sanctifieth the gift. Apart from Christ and his perfect sacrifice, an acceptable gift is an impossibility for man. For at best our gifts have in them the sinfulness of our nature; they are miserably flawed by defectiveness of motive, duplicity of aim, infirmity of will. "The prayers of all saints," what force of interpretation must they have with God, if, as we are sure, "the effectual, fervent prayer of a" (single) "righteous man availeth much!" Yet when St. John saw in a vision "the prayers of all saints" offered "upon the golden altar which was before the throne," it was in union with that which alone can perfume the tainted offsprings of even the regenerate man. "There was given unto him much increase, that he should offer it with the prayers of all saints upon the golden altar which is before the throne."

The increase is the intercession of Jesus. Place your offering, be it prayer or alms, deed or work, or submission—in his hands for presentation; pray him, as your only priest, to transact for you with God, and he will do so. And the sense of God's favor shall shine out upon thy offering; and the dew of his blessing shall descend upon it, and ye shall be gladdened with your Father's smile.—*Goulburn.*

[February 22.]

Heaven, as a place of residence and state of enjoyment, should always be viewed in contrast with earth. This is a state of pupilage and probation, that of dignity and probation. Here is conflict, there victory. This is the race, that the goal. Here we suffer, there we reign. Here we are in exile, there at home. On earth we are strangers and pilgrims, in heaven fellow-citizens with the saints; and, released from the strife and turmoil, the bitterness and regrets of earth, are incorporated forever with the household of God.

This is triumph! How striking the contrast! How must

earth and its trials be lost sight of in such a vision! How must this contrast strengthen the ties of confidence, and kindle the ardor of devotion!

What did Moses care for the perils of the wilderness, when, from the storm-defying steep of Pisgah, he viewed the land of promise, imaging forth the green fields of heaven's eternal spring! Look at Elijah, the immortal Tishbite, exchanging the sighs and solitude of his juniper shade, for wheels of fire and steeds of wind that bore him home to God! Look at Paul—poor, periled and weary, amid the journeyings and conflicts of his mission: the hand that once stretched the strong eastern tent, or wore the dungeon's chain, now sweeps in boldest strain the harps of heaven. * * * Look at the Christian of apostolic and early times, exchanging the clanking of his chains and the curses of his jailor—the dungeon's den and martyr's stake—for the notes of gladness and lofty anthem pealing from lute and harp, bedecked with eternal amaranth! The load of chain with which he went out to meet the descending car of his triumph, with its angel escort, was a richer dowry than the jewels of empire! The taper that flickered in the dungeon of the sainted hero shot a ray more glorious than ever spoke the splendor of the full-orbed moon! What are the crowns or the diadems of all this world's masters or Cæsars, compared with the prospects of such an expectant!

Christians! what need we care, although on earth we were so poor and low we had nor purse nor pillow; so few and trodden down we had no power; and hamlets, huts and grottoes were the places where we wept and prayed; if these are to be exchanged for a residence amid the jaspers and chrysolites, the emeralds and sapphires of the heavenly Jerusalem!

What though soiled by the dust of toil or damp with the dungeon's dew—struggling amid tattered want along our lone and periled path—when even here we find ourselves invested with glory in the night of our being, and sustained by hopes guiding and pointing us to the temple hymn and the heavenly harp above! * * * —*Bascom.*

HOME STUDIES IN CHEMISTRY AND PHYSICS.

BY PROF. J. T. EDWARDS, D.D.

Director of the Chautauqua School of Experimental Science.

CHEMISTRY OF FIRE.—ANCIENT FANCIES.

In all ages, and among all nations, fire has been regarded with peculiar interest. Of the four great elements so essential to life—earth, air, water, fire—the last has often been considered as divine in its origin and influence. To the unscientific observer it seems more than matter, and little less than spirit. Contemplating a flame, he sees that while it has form, it lacks solidity. He may pass a sword through it, but like the ghost of the story, no wound is made in its ethereal substance. Its touch is softer than down, but it penetrates the hardest substances. The diamond carves glass, but flame destroys the diamond.

Men early found that fire was directly connected with their comfort and progress, and even essential to their existence. How they first obtained it is still matter of conjecture; whether it was brought down from the skies, as the ancient Greeks supposed, struck out from the flinty rock, evolved by the friction of dry wood, kindled by the lightning, or obtained from the flaming torch of the volcano, we can not tell.

Certain it is, that having once been obtained, all the early races were very careful to preserve it. Among many it was regarded as sacred, and kept perpetually burning, both in their places of worship and in their homes. The officers appointed for its preservation were of the highest rank and influ-

ence. Among the titles assumed by Augustus Cæsar was that of keeper of the public fire. Whenever by accident the fire in the temple of Vesta, at Rome, was extinguished, all public business was at once suspended, because the connection between heaven and earth was believed to be severed, and must be restored before business could properly proceed.

Grecian colonists carried fire to their new homes from the altar of Hestia. The "Prytaneum" of the ancient Greeks and Romans was a place where the national fire was kept always burning; it was here the people gathered, foreign ambassadors received, and hospitalities of the state were offered. Here, too, heads of families obtained coals for lighting their household fires, which in turn became sacred, so that every hearth was an altar, where resided the Lares and Penates, the gods who presided over the welfare of the home.

Fancies akin to these beliefs of olden time may still be found among the nations of the East and in northern Europe.

MODERN FALLACIES.

No correct ideas of combustion were attained until the time of Lavoisier.² This great French savant gave precision and accuracy to the investigations of chemical science by the introduction of the balance. He disproved the theory that "water is the ultimate principle of all things," and prepared the way for a clear apprehension of the truth

that matter, though constantly changing its form, is never destroyed. He also announced the correct theory of combustion. Until this time scientists had held what was called the "Phlogiston" Theory." We can but smile at the absurdity of this belief, and yet no hypothesis was ever taught more positively, or maintained more tenaciously. It declared, in brief, that when substances burned, they parted with a certain material called phlogiston. When, at length, its advo-

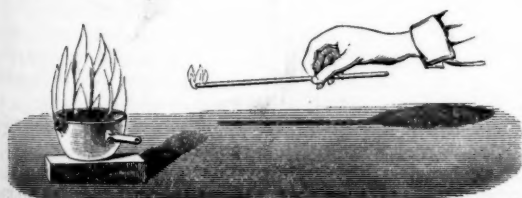


MAGNESIUM RIBBON BURNING, AND PRODUCING MAGNESIUM OXIDE (MgO).⁴

cates were asked to explain the fact, discovered by Dr. Priestly,⁵ that quicksilver, when burned, weighed more than before, they were forced to put forward the ridiculous statement that phlogiston possessed the property of "buoyancy" so that when it was contained in a body its weight was lessened; which was as wise as the brilliant supposition that a person can lift himself over a fence by tugging at his boot straps. After a fierce struggle they were forced to confess that they had placed "the cart before the horse." The truth was precisely opposite to their statement. Substances when they burn take up something instead of giving it off. That something is oxygen, and a body when burned, if it can be weighed, will be found to weigh as much more as the added weight of the oxygen which has united with it. Example: Iron-rust is iron, plus oxygen.

THE TRUE EXPLANATION.

We shall here confine ourselves to the consideration of the heat and light produced by chemical action. It will be remembered that by this term (chemical action) is meant the process of uniting two or more different elements to form a compound different from either. We usually consider air essential to combustion, but this is not necessarily the fact. Gold foil or powdered antimony, dropped into a jar of chlorine, spontaneously ignites. Even in the interior of the earth, heat must be produced by the uniting of any elements that have an affinity for each other.



BORACIC ACID IMPARTS A GREEN COLOR TO THE FLAME OF ALCOHOL.⁶

The most common agent of combustion is oxygen. Of this interesting gas some description has been given in a preceding article. It is the fruitful source of almost all of our artificial heat.

The fallen tree in the forest is slowly consumed by it, not less surely than the flaming wood and coal in our stoves. The human body is a furnace. In the minute corpuscles of the blood, carbon is uniting with oxygen as certainly as are the particles of carbon in the flame of our lamps.

Oxygen is the scavenger that partially cleans our gutters. It is a bird of prey that devours the offal in our fields and woods. It is nothing less than the gnawing tooth of old Father B-fab

Time himself, which crumbles cities and destroys all things.

Combustion, as we now know it, consists simply in the union of some combustible material with oxygen. The generic term for all this action is "oxidation." For convenience, special names are given to particular modes. When metallic oxidation occurs we call the product "rusting." When oxygen unites with vegetable matter we call it decaying or rotting; when with animal substances we term it rotting or putrefaction. When flame is produced, the word combustion or burning is used. The amount of heat generated is, in all cases, proportioned to the amount of chemical action. Great ingenuity and skill have been shown in the discovery and utilization of materials best calculated to combine readily with oxygen. To these, as a class, has been applied the term

HYDRO-CARBONS.

All substances composed essentially of the elements, hydrogen and carbon, would come under this designation. These would include coal, wood, petroleum, the fats, resins, wax and

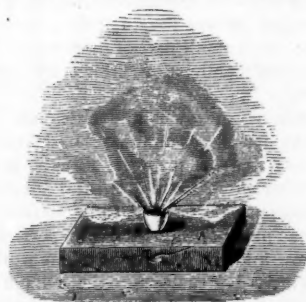


PHOSPHORUS BURNING IN OXYGEN.⁸

many others, with some of the gases, among which may be named light and heavy carburetted hydrogen, CH_4 and C_2H_6 , respectively.

In the days of our grandfathers tallow candles were almost universally employed for lighting houses, and wood for warming them. It would not be impossible to find even now, in our own country, homes illuminated (?) by a rag burning in a saucer of fat. Some of us are not too young to remember the bundle of candle-rods—nice, straight sticks used in dipping candles—snugly put away for that purpose, alas! sometimes summoned forth to assist in enforcing family discipline!

Strands of twisted cotton wick were suspended from these sticks, and successively dipped into a kettle of hot tallow, until external additions made them of the requisite size. Tin candle moulds finally superseded these. Then the wick was suspended in the center and the fat poured in. In cooling, the candles contracted, and so slipped easily from the moulds.



GREEN FIRE COLORED BY A SALT OF BARIUM.⁹

Wax candles can not be cast in moulds, as they expand in cooling. They are made by pouring successive additions upon them. They are afterward given symmetrical form by rolling and shaping. Along the sea coast I have seen women

and children gathering bay berries,¹⁰ a fruit about as large as a grain of black pepper and covered with a grayish-white, fragrant wax. When these seeds are placed in hot water the wax dissolves and serves the same purpose as tallow, making delightfully aromatic candles.

Many of the hydro-carbons possess an agreeable odor. Sometimes the woodmen gather the bark and chips of the hickory to smoke hams and shoulders on account of the peculiarly pleasant flavor they impart. In burning, a candle or lamp becomes a gas factory, manufacturing and consuming its own product. The flame consists of three cones. The first, that next to the wick, is composed solely of gas. It is not hot, as can be shown by thrusting the end of a match into it, the match will not ignite. If the match be placed across the flame at the same point it will burn at the edges, but not in the center. A more striking illustration of the fact that the flame is hot only where it comes in contact with the air, can be shown in the following manner: Place on the bottom of an inverted plate some alcohol, in the center set a tiny saucer containing powder; ignite the alcohol, and the powder will remain undisturbed in the center of the surrounding flame until a draft brings the edge of the flame against the powder, when it will at once explode.

Look steadily at the flame of an ordinary candle and you can readily discern the three cones; the first is gas, the second gas in rapid combination with the oxygen of the air, the third the products of this combination—watery vapor, carbonic anhydride, and, possibly, some unconsumed carbon.



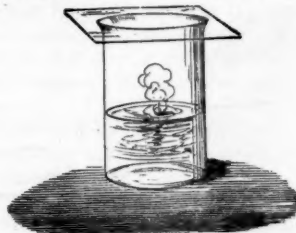
RED FIRE COLORED BY A SALT OF STRONTIUM.¹¹

The process that goes on in our stoves is essentially the same. The carbon and hydrogen of the wood or coal unite with the oxygen that passes through the draft. Now note a wonderful provision for our comfort. It has already been remarked that the product of combustion consists of the thing burned, plus oxygen. Suppose, in the case of our fires, this product were a solid, we should then be forced to take out of the stove more material than we put in. The Creator has, however, provided that these resulting materials shall take the form of gas or vapor, so that they can float away. The ashes that remain form but a small part of the whole. The two most common products of combustion are watery vapor and carbonic anhydride.

The illumination of our towns and cities has long been accomplished by the use of gas manufactured from coal. Bituminous coal is used for this purpose, and the process consists in heating it to destructive distillation, and afterward condensing and absorbing such portions of the volatilized materials as might clog the gas pipes or interfere with perfect combustion.

Nature, it is now known, has her own gas works, on an immense scale. Thirty-five years ago the village of Fredonia, N. Y., was partially lighted with gas, and the supply is still unexhausted. Indeed, of late, many private individuals have sunk pipes two or three hundred feet, and thus supplied their homes with gas for illuminating, heating, and cooking purposes. In Butler and McKean counties, Pennsylvania, the production of these gas wells is enormous. Many have been burning day and

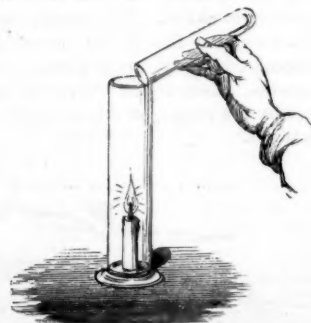
night for years, while others have been utilized for heating and lighting towns and cities. Gas is now extensively used in rolling mills for smelting iron. Petroleum, or rock oil, which is usually associated with this natural gas, has now become of immense value to this and other lands. It is one of the chief articles of export from this country, ranking perhaps as fourth. Wells have recently been struck in Pennsylvania that flowed 5,000 and 6,000 barrels per day.



SODIUM BURNING ON HOT WATER.¹²

There is reason to believe that this material is the product of distillation of organic matter in the earth. It is found in porous rock, usually coarse sand, at depths varying from three hundred to two thousand feet. When the rock above the sand containing oil is tight, the gas is often retained, which by its expansion presses upon the oil and forces it to the surface through the pipes put down for this purpose. This produces a flowing well. When the gas has escaped a pump is necessary.

The most useful hydro-carbon now employed is coal. Its use was first introduced in the latter part of the twelfth century, and as late as the thirteenth century petitions were made by residents of London demanding its exclusion, on account of its injurious effect on the health. But now, Great Britain mines annually more than one hundred million tons of coal. Its uses are manifold. By it England has multiplied her power a thousand fold. It is almost always employed in generating steam, and the aggregate steam power of England is equal to the productive laboring force of four hundred millions of men, or "twice the power of the adult working population of the globe." Most countries know its value.



POURING CARBON DI-OXIDE FROM ONE VESSEL INTO ANOTHER TO EXTINGUISH FLAME.¹³

Coal is the key that unlocks for us the treasures of the iron ore. It seizes upon the oxygen in the ore, and liberates the pure metal. By a wonderful provision they often exist in the same mountain, side by side. I have seen in Pennsylvania, running out of the same tunnel in the hills, car loads of coal and iron ore.

Among the many advantages possessed by our own country is our immense store of this precious hydro-carbon. With an area of 300,000,000 miles of territory, we have more than 200,000 square miles of known coal producing area, or one in fifteen.

Great Britain has one-half of the coal fields of all Europe,

but even she has but one square mile of coal to twenty square miles of territory. Beside, our coal seams are of great thickness, and lie comparatively near the surface. In the far West, vast fields of lignite¹⁴ have been discovered, so that there seems no prospect of our exhausting our fuel supply for ages to come.

The diamond is crystallized carbon, and can be burned, though one would hardly care to be warmed by so costly a fire.

Cleopatra, in a freak of extravagance, dissolved a wonderful pearl, but who could think of the wise queen of England using in so wasteful a manner her Kohinoor.¹⁵ Six of the great diamonds of the world are called, by way of eminence, "The Paragons," and a romantic interest has been attached to this form of carbon among all nations. In point of fact, however, the black diamonds of the coal pit are more interesting, and of far greater value to mankind than these glittering gems from Golconda,¹⁶ Brazil and the Dark Continent.¹⁷

TEMPERANCE TEACHINGS OF SCIENCE; OR, THE POISON PROBLEM.

BY FELIX L. OSWALD, M.D.

CHAPTER V.—PROHIBITION.

"Rugged or not, there is no other way."—*Luther.*

The champions of temperance have to contend with two chief adversaries—ignorance and organized crime. The well-organized liquor league can boast of leaders whose want of principles is not extenuated by want of information, and who deliberately scheme to coin the misery of their fellowmen into dollars and cents. But the machinations of such enemies of mankind would not have availed them against the power of public opinion, if their cunning had not found a potent ally in the ignorance, not of their victims only, but of their passive opponents. We need the moral and intellectual support of a larger class of our fellow-citizens, before we can hope to secure the effectual aid of legal remedies, and in that direction the chief obstacles to the progress of our cause have been the prevailing misconceptions on the following points:

I. COMPETENCE OF LEGISLATIVE POWER.—There can be no doubt that the legislative authority even of civilized governments has been frequently misapplied. The most competent exponents of political economy agree that the state has no business to meddle in such affairs as the fluctuation of market prices, the rate of interest, the freedom of international traffic. On more than one occasion European governments, having attempted to regulate the price of bread-stuffs, etc., were taught the folly of such interference by commercial dead-locks and the impossibility of procuring the necessities of life at the prescribed price, and were thus compelled to remedy the mischief by repealing their enactments. Usury laws tend to increase, instead of decreasing, the rate of interest, by obliging the usurer to indemnify himself for the disadvantage of the additional risk. The attempt to increase national revenues by enforcing an artificial balance of trade has ever defeated its own object. It is almost equally certain that compulsory charities do on the whole more harm than good. On the other hand, there are no more undoubtedly legitimate functions of government than the suppression, and the, if possible, prevention, of crime, and the enforcement of health laws; and it can be demonstrated by every rule of logic and equity that the liquor traffic can be held amenable in both respects. The favorite argument of our opponents is the distinction of crime and vice. For the latter, they tell us, society has no remedy, except in as much as the natural consequences (disease, destitution, etc.) are apt to recoil on the person of the perpetrator; the evil of intemperance therefore is beyond the reach of the law. We may fully concede the premises without admitting the cogency of the conclusion. The suspected possession or private use of intoxicating liquors would hardly justify the issue of a search warrant, but the penalties of the law can with full justice be directed against the manufacturer or vender who seeks gain by tempting his fellowmen to indulge in a poison infalli-

bly injurious in any quantity, and infallibly tending to the development of a body and soul corrupting habit; they may with equal justice be directed against the consumer, stupefied or brutalized by the effects of that poison. The rumseller has no right to plead the consent of his victim. The absence of violence or "malice prepense,"¹ is a plea that would legalize some of the worst offenses against society. The peddler of obscene literature poisons the souls of our children without a shadow of ill-will against his individual customer. The gambler, the lottery-shark, use no manner of force in the pursuit of their prey. By what logic can we justify the interdiction of their industry and condemn that of the liquor traffic? By the criterion of comparative harmlessness? Have all the indecencies published since the invention of printing occasioned the thousandth part of the misery caused by the yearly and inevitable consequences of the poison vice? The lottery player may lose or win, but the customer of the liquor vender is doomed to loss as soon as he approaches the dram-shop. The damage sustained by the habitual player may be confined to a loss of money, while the habitual drunkard is sure to suffer in health, character and reputation, as well as in purse. And shall we condone the conduct of the befuddled drunkard on account of a temporary suspense of conscious reason? That very *dementia* constitutes his offense.

His actions may or may not result in actual mischief, but he has put the decision of that event beyond his control. The man who gallops headlong through crowded streets is punished for his reckless disregard of other men's safety, though the hoofs of his horse may have failed to inflict any actual injury. A menagerie keeper would be arrested, if not lynched, for turning a city into a pandemonium by letting loose his bears and hyenas, and for the same reason no man should be permitted to turn himself into a wild beast.

"Virtue must come from within," says Prof. Newman:² "to this problem religion and morality must direct themselves. But vice may come from without; to hinder this is the care of the statesman." And here, as elsewhere, prevention is better than cure. By obviating the temptations of the dram-shop a progressive vice with an incalculable train of mischievous consequences may be nipped in the bud. Penal legislation is a sham if it takes cognizance of moral evils only after they have passed the curable stage. "It is mere mockery," says Cardinal Manning,³ "to ask us to put down drunkenness by moral and religious means, when the legislature facilitates the multiplication of the incitements to intemperance on every side. You might as well call upon me as a captain of a ship and say: 'Why don't you pump the water out when it is sinking,' when you are scuttling the ship in every direction. If you will cut off the supply of temptation, I will be bound by the help of God to convert drunkards, but until you have taken

off this perpetual supply of intoxicating drink we never can cultivate the fields. Let the legislature do its part and we will answer for the rest."

All civilized nations have recognized not only the right but the duty of legislative authorities to adopt the most stringent measures for the prevention of contagious disease; yet all epidemics taken together have not caused half as much loss of life and health as the plague of the poison vice.

2. **MAGNITUDE OF THE EVIL.**—Since health and freedom began to be recognized as the primary conditions of human welfare, the conviction is gaining ground that the principles of our legislative system need a general revision. It was a step in the right direction when the lawgivers of the Middle Ages began to realize the truth that the liberty of individual action should be sacrificed only to urgent consideration of public welfare, but the modified theories on the comparative importance of these considerations have inaugurated a still more important reform. Penal codes gradually ceased to enforce ceremonies and abstruse dogmas and to ignore monstrous municipal and sanitary abuses. The time has passed when legislators raged with extreme penalties against the propagandists of speculative theories and ignored the propagation of slum diseases, yet, after all, there is still a lingering belief in the minds of many contemporaries that intemperance, as a physical evil, a "mere dietetic excess," does not justify the invasion of personal liberty. They would consent to restrict the freedom of thought and speech rather than the license of the rum-dealer, yet the tendency of a progressive advance in public opinion promises the advent of a time when that license will appear the chief anomaly of the present age. The numberless minute prescriptions and interdicts of our law books and their silence on the crime of the liquor traffic will make it difficult for coming ages to comprehend the intellectual status of a generation that could wage such uncompromising war against microscopic gnats and consent to gratify the greed of a monstrous vampire.

3. **SELF-CORRECTING ABUSES.**—Modern physicians admit that various forms of disease which were formerly treated with drastic drugs can be safely trusted to the healing agencies of nature. Many social evils, too, tend to work out their own cure. High markets encourage competition and have led to a reduction of prices. Luxury leads to enforced economy by reducing the resources of the spendthrift. Dishonest tradesmen lose custom, and a German government that used to fine editors for publishing unverified rumors might have left it to the subscribers to withdraw their patronage from a purveyor of unreliable news. But there are certain causes of disease that demand the interference of art. *Poisons*, especially, require artificial antidotes. If a child has mistaken arsenic for sugar, its life commonly depends on the timely arrival of a physician. The organism may rid itself of a surfeit, but is unable to eliminate the virus of a skin disease. Alcoholism belongs to the same class of disorders. We need not legislate against corsets; the absurdities of fashion change and vanish like fleeting clouds, and their votaries may welcome the change; but drunkards would remain slaves of their vice though the verdict of public opinion should have made dram-drinking extremely unfashionable. The morbid passion transmitted from sire to son, and strengthened by years of indulgence, would defy all moral restraints and yield only to the practical impossibility to obtain the object of its desire.

"A number of years ago," says Dr. Isaac Jennings, "I was called to the shipyard in Derby, to see John B., a man about thirty years of age, of naturally stout, robust constitution, who had fallen from a scaffold in a fit, head first upon a spike below. In my visit to dress the wounded head, I spoke to him of the folly and danger of continuing to indulge his habit of drinking, and obtained from him a promise that he would abandon it. Not long after I learned that he was drinking again, and reminded him of his promise. His excuse was, that it would

not do for him to abandon the practice of drinking suddenly. A few weeks after this he called at my office and requested me to bleed him, or do something to prevent a fit, for he felt much as he did a short time before having the last fit. I said to him, 'John, sit down here with me and let us consider your case a little.' I drew two pictures and held before him; one presented a wife and three little children with a circle of friends made happy and himself respectable and useful in society; the other, a wretched family, and himself mouldering in a drunkard's grave; and appealed to him to decide which should prove to be the true picture. The poor fellow burst into tears and wept like a child. When he had recovered himself from sobbing so that he could speak he said: 'Doctor, to tell you the truth, it is not that I am afraid of the consequences of stopping suddenly that I do not give up drinking. *I can not do it.* I have tried and tried again, but it is all in vain. Sometimes I have gone a number of weeks without drinking, and I flattered myself that the temptation was gone, but it returned, and now if there was a spot on earth where men lived and could not get spirits, and I could get there, I would start in a minute.' I thought I had understood something of the difficulties of hard drinkers before, but this gave me a new impression of the matter, and most solemnly did I charge myself to do what I could to make a spot on earth where men could live and couldn't get spirits."

4. **LESSER EVILS.**—Even in a stricter form than any rational friend of temperance would desire its enforcement, prohibition would not involve any consequences that could possibly make the cure a greater evil than the disease. The predicted aching void resulting from the expurgation of beer-tunnels could be filled by healthier means of recreation. The grief of the superseded poison-mongers would not outweigh the mountain-load of misery and woe which the abolishment of their cursed trade would lift from the shoulders of the nation. When the state of Iowa declared for prohibition the opponents of that amendment bemoaned the loss entailed by the departure of "so many industrious and respectable citizens," *i. e.*, from the exodus of the rumsellers! We might just as well be asked to bewail the doom of the Thugs⁴ as the subversion of a prosperous industry. We might as well be requested to sympathize with the respectable bloodhound-trainers and knout-manufacturers whom the abolition of slavery threw out of employment. The liquor dealer has no right to complain about the rigor of a law that permits him to depart with the spoils of such a trade. We are told that the mere rumor of Maine laws has deterred many foreigners from making their homes with us; that the Russian peasants decline to come without their brewers and distillers, and that by general prohibition we would risk to reduce our immigration from every country of northern Europe. We must take that risk, and let Muscovites rot in the bogs of the Volga if they can not accept our hospitality without turning our bread corn into poison. Our utilitarian friends would hardly persuade us to legalize cannibalism in order to encourage a larger immigration of Fiji islanders. The absence of such guests might not prove an unqualified evil. I shall not insult the intelligence of my readers by repeating the drivel of the wretches who would weigh the reduction of revenues against the happiness of a hell-delivered nation, and I will only mention the reply of a British financier who estimates that the increase of national prosperity would offset that reduction in less than five years.

5. **EFFICACY OF PROHIBITION.**—Will prohibition prevent the use of intoxicating liquor? Not wholly, but it will answer its purpose. It will banish distilleries to secret mountain glens and hidden cellars. It will drive the man-traps of the poison-monger from the public streets. It will save our boys from a hundred temptations; it will help thousands of reformed drunkards to keep their pledge; it will restore peace and plenty to many hundred thousand homes. More than a century ago the philosopher Leibnitz⁵ maintained that the plenary sup-

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pression of the liquor traffic would be the most effectual means for reforming the moral status of civilized nations, and experience has since fully demonstrated the correctness of that opinion. A memorandum endorsed by a large number of statistical vouchers describes the effect of prohibition in Sweden: "The nation rose and fell, grew prosperous and happy, or miserable and degraded, as its rulers and law-makers restrained or permitted the manufacture and sale of that which all along the track of its history has seemed to be the nation's greatest curse." * * * "The vigorously maintained prohibition against spirits in 1753-1756, and again in 1772-1775, proved the enormous benefits effected in moral, economical, and other respects, by abstinence from intoxicating spirits." * * * "This it is which has so helped Sweden to emerge from moral and material prostration, and explains the existence of such general indications in that country of comfort and independence among all classes."

From the *Edinburgh Review* for January, 1873, we learn that in eighty-nine private estates in England and Scotland, "the drink traffic has been altogether suppressed, with the happiest social results. The late Lord Palmerston⁶ suppressed the beer shops in Romsey as the leases fell in. We know an estate which stretches for miles along the romantic shore of Loch Fyne,⁷ where no whiskey is allowed to be sold. The peasants and fishermen are flourishing. They have all their money in the bank, and they obtain higher wages than their neighbors when they go to sea"—a proof that a small oasis of temperance can maintain its prosperity in the midst of poison-blighted communities.

Here and there the wiles of the poison-mongers will undoubtedly succeed in evading the law, but their power for mischief will be diminished as that of the gambling-hell was diminished in Homburg and Baden,⁸ where temptation was removed out of the track of the uninitiated till the host of victims dwindled away for want of recruits. Not the promptings of an innate passion, but the charm of artificial allurements is the gate by which ninety-nine out of a hundred drunkards have entered the road to ruin. It would be an understatement to say that the temptation of minors will be reduced a hundred fold wherever the total amount of sales has been reduced as much as five fold—a result which has been far exceeded, even under the present imperfect system of legal control. "In the course of my duty as an Internal Revenue officer," says Superintendent Hamlin of Bangor, "I have become thoroughly acquainted with the state and extent of the liquor traffic in Maine, and I have no hesitation in saying that the beer trade is not more than one per cent. of what I remember it to have been, and the trade in distilled liquors is not more than ten per cent. of what it was formerly." "I think I am justified in saying," reports the Attorney-General, "that there is not an open bar for the sale of intoxicating liquor in this county" (Androscoggin, including the manufacturing district of Lewiston—once a very hotbed of the rum traffic). "In the city of Biddeford, a manufacturing place of 11,000 inhabitants, for a month at a

time not a single arrest for drunkenness has been made or become necessary." And from Augusta (the capital of the state): "If we were to say that the quantity of liquor sold here is not one-tenth as large as formerly, we think it would be within the truth; and the favorable effects of the change upon all the interests of the state are plainly seen everywhere."

"It is perhaps not necessary," says the *Boston Globe*, of July 29, 1875, "to dwell on the evils of intemperance, and yet people seldom think how great a proportion of these might be prevented by driving the iniquity into its hiding places, and preventing it from coming forth to lure its victims from among the unwary and comparatively guileless. Few young men who are worth saving, or are likely to be saved to decency and virtue, would seek it out if it were kept from sight. But when it comes forth in gay and alluring colors, it draws a procession of our youth into a path that has an awful termination. Nor does the evil which springs from an open toleration of the way in which this vice carries on its traffic of destruction fall only on men. A sad proportion of its victims is made up from shop girls and abandoned women who are not so infatuated at the start that they would plunge into a life of infamy if its temptations were strictly under the ban, and kept widely separated from the world of decency. But it intruded itself upon them. Its temptations and opportunities are before their eyes, and the way is made easy for their feet to go down to death."

"To what good is it," says Lord Brougham,⁹ "that the legislature should pass laws to punish crime, or that their lordships should occupy themselves in trying to improve the morals of the people by giving them education? What could be the use of sowing a little seed here and plucking up a weed there, if these beer shops are to be continued to sow the seeds of immorality broadcast over the land, germinating the most frightful produce that ever has been allowed to grow up in a civilized country, and, I am ashamed to add, under the fostering care of Parliament."

The prohibition of the poison traffic has become the urgent duty of every legislator, the foremost aim of every moral reformer. The verdict of the most eminent statesmen, physicians, clergymen, patriots and philanthropists, is unanimous on that point. We lack energy, not competence, nor the sanction of a higher authority, to gain the votes of the masses.

"We can prove the success of prohibition by the experience of our neighboring state," writes Dr. Herbert Buchanan, of Portsmouth, New Hampshire; "all the vicious elements of society are arraigned against us, *but I have no fear of the event if we do not cease to agitate the subject.*"

Agitation, a ceaseless appeal to the common sense and conscience of our fellowmen can, indeed, not fail to be crowned with ultimate success. The struggle with vice, with ignorance and mean selfishness may continue, but it will be our own fault if our adversaries can support their opposition by a single valid argument, and the battle will be more than half won if a majority of our fellow-citizens have to admit that we contend no longer for a favor, but for an evident right.

STUDIES IN KITCHEN SCIENCE AND ART.

V. TEA, COFFEE, AND CHOCOLATE.

BY BYRON D. HALSTED, SC. D.

We have here to consider the sources of the three leading dietetic beverages. They are very unlike in general appearance, but all possess the same vegetable principle, called an alkaloid,¹ though known under different names. Thus modern chemistry has proved the identity of the theine of the tea, the caffeine² of the coffee and the theo-bromine³ of the chocolate. This same vegetable alkaloid, remarkable for its large

per cent. of nitrogen, is found in small quantities in a few other plants, most of which have been used to some extent for the making of an exhilarating drink. It answers our purpose best to treat each of our three subjects under its respective head.

TEA (*Thea viridis*).—The tea of commerce is the prepared leaves of a shrub belonging to the order Camelliaceæ⁵ represented in the United States by loblolly bay⁶ and Stuartia.⁷

Perhaps the most familiar near relative of the tea plant is the camellia of our green houses and window gardens. The wild tea shrub grows from twenty to thirty feet high, and is found native in China and Japan. When under cultivation the shrub is pruned so as to not exceed six feet in height. The flowers are large, white and fragrant; they are produced in clusters in the axils of the simple, oblong, evergreen, serrate leaves. China and Japan are among the leading tea-growing countries, its cultivation being chiefly confined between twenty-five and thirty-five north latitude. Tea was in general use in China in the ninth century, but it was not until the seventeenth century that it was introduced into Europe. About the middle of this century the East India Company imported tea into England, since which time it has become the regular beverage of many millions of people in all parts of the world. The importations of tea into the United States for the year ending June 30th, 1884, were 67,665,910 pounds. It will be seen that this gives somewhere near a pound and a quarter of tea for each man, woman and child in this country. Most of our China tea trade is carried on with Shanghai, Foo Chow and Amoy.

In China the tea shrub is grown chiefly on the southern slopes of hills in poor, well watered soil, to which manure is applied. The seeds are dropped in holes at regular intervals, and during the third year the first crop is obtained. In from seven to ten years the shrubs are cut down and shoots spring up from the stumps, which continue to yield crops of leaves. A single plant produces on an average between three hundred and three hundred and fifty pounds of dried leaves. The leaves are picked three times a year, in April, May, and June or July. The young, tender leaves of the first gathering make the best tea, and this is very largely consumed in its native country. The older leaves of the second and third pickings make a poorer quality of tea which abounds in tannin,⁸ and contains but a small per cent. of the best elements of superior tea. It was long supposed that black and green sorts of tea were made from distinct varieties, or even species of plants; in fact, there has been a great deal of mystery surrounding the culture and preparation of tea until within the past score of years. Authorities now state that there is only one species of plant yielding tea leaves, and from this all sorts are made. The differences are natural, being some of them due to climate and conditions of soil, etc., while others are the result of the manipulation of the leaves after they are gathered. Black and green tea may come from the same shrub, or even the same branch of a plant. The leaves forming black tea undergo a fermentation before they are dried, while those designed for green tea are at once submitted to a high heat in iron pans, and not copper pans, as generally supposed. After the leaves for black tea have been gathered they are placed in heaps, when they become flaccid and turn dark from incipient fermentation. The leaves are then rolled between the thumb and fingers or upon bamboo tables until the desired twist is obtained. They next pass to a drying room and are heated in an iron pan; again twisted, and afterward dried over a slow fire. The principal difference between the preparation of black and green tea is that in the latter the freshly gathered leaves go at once into the heated pans. The repeated twisting and heating is nearly the same with both classes. The green teas are sometimes artificially colored by using turmeric⁹ with gypsum or Prussian blue. A flavor is frequently given to the tea by adding aromatic flowers, as those of the pekoe and caper.¹⁰ Among the leading varieties of black tea are: Bohea, a small leaf, crisp and strong odor, with brackish taste; two sorts of Congous—the large leaf with fine flavor, and the small leaf with a burnt smell. The Souchong is the much prized "English Breakfast," made from leaves of three-year-old trees. Only a small part of the so-called Souchong is genuine. Pekoe is made from the tenderest leaves gathered from three-year-old plants while in bloom. Oolongs are common kinds of black teas, much used for mixing with other sorts. Of the green teas the

Gunpowder is round, like shot, with green color and fragrant taste. The Imperial is more loosely rolled than the Gunpowder. Young Hyson is in loose rolls, which easily crumble to the touch; it gives a light green infusion. Old Hyson is the older leaves in the picking for Young Hyson. Twankay consists of mixed and broken leaves, and is of inferior quality. Japan teas are both colored and uncolored, and come from Japan; they are very largely consumed in this country.

The chemical composition of a fair sample of tea is; Theine, 1. to 3. per cent.; caseine,¹¹ 15; gum, 18.; sugar, .3; tannin, 26., aromatic oil, .75; fat, 4.; vegetable fiber, 20.; mineral substances, 5., and water, 5. per cent.

The tannin is an astringent, while the theine acts as a gentle excitant upon the nervous system. This is probably enhanced by the warmth of the infusion. The best authorities agree that tea is a valuable article of diet for healthy, grown people. It however is not suitable for children until growth is completed. Adults with irritable constitutions may be injured by tea-drinking. Tea is the solace of old age. Cibber¹² wrote: "Tea! thou soft, thou sober, sage and venerable liquid * * * thou female tongue-running, smile-smoothing, heart-opening, wink-tipling cordial, to whose glorious insipidity I owe the happiest moments of my life, let me fall prostrate." Waller¹³ truthfully says:

"Tea doth our fancy aid,
Repress those vapors which the head invade
And keep the palace of the soul."

Tea is extensively adulterated in many ways. In China exhausted tea leaves and foliage of other trees are employed by millions of pounds each year. Willow leaves are among the principal ones used for mixing with tea. A British consul once related that at Shanghai there were at one time 53,000 pounds of willow leaves in preparation to be sold as tea. Mineral matters are used to color or "face" the tea. "The common test," states Mr. Felker, in his work "What the Grocers Sell Us," "is by infusion; this is poured off the leaves and examined for color, taste, and odor, all of which are characteristic. * * * Impurities like sand, iron filings and dirt may be seen among the leaves or at the bottom of the cups. The leaves, too, betray by their coarseness and botanical character, the nature and quality of the tea, for although the leaves of the genuine tea differ much in form and size, yet their venation and general structure are very distinctive. * * * 'Lie tea,' used to adulterate Gunpowder tea, consists of tea dust mixed with mineral substances, starch and gum, and then formed into little masses resembling tea." Large tea houses employ professional tea tasters who make steepings and judge upon the flavor, purity, etc.

COFFEE.—The coffee of commerce is the seed of a shrub, *Coffea Arabica*,¹⁴ belonging to the order Rubiaceæ,¹⁵ which is represented in the United States by the charming little "blueets" of our pastures in spring. The cape jessamine and bouvardias¹⁶ of the green house are near relatives of the coffee plant. The name coffee is probably derived from the Arabic word *Kahwah*, although some authorities contend that it is traced to Caffa, a province of Abyssinia, where the coffee plant flourishes in the wild state. The coffee shrub is an evergreen, growing to the height of twenty feet, with long, smooth, shining leaves. The pure white flowers are produced in clusters in the axils of the leaves and followed by fleshy berries which, when ripe, resemble small, dark red cherries. Each berry usually contains two seeds embedded in the yellowish pulp. These seeds, when separated from the pulp and papery covering, form the raw coffee of the stores. Each seed—improperly called a berry—is somewhat hemispherical, with a groove running through the middle of the flat side. Sometimes one seed is abortive in the berry, and the other becomes round, as in the Wynaad coffee from India, sometimes called "male berry" coffee.

Coffee is cultivated in many countries lying between fifteen north and fifteen south latitude. It may be successfully grown thirty degrees from the equator. Like the tea plant, the coffee shrub favors the well watered mountain slopes. The trees are set in long, straight rows, six feet apart, and six feet from each other in the row. The coffee tree is naturally a plant with long, straggling shoots, but under cultivation it is pruned to make a shrub not exceeding six feet in height, with long, lateral branches. A full crop should be obtained the third year. The berries are gathered when the pulp begins to shrivel, and are at once taken to the store-house, where they are pulped. The berries are passed between large, rough rollers, which remove the pulp, but not the parchment-like covering of the seeds. The berries with the pulp removed are heaped up, covered with old sacking, and allowed to ferment for two days. Water is turned on and all glutinous matter removed. The seeds are spread out to dry, after which they are passed between wooden cylinders that remove the thin, dry covering. The coffee seeds, after being winnowed, are assorted into various sizes and packed ready for shipment. A thrifty shrub yields two pounds of marketable coffee. The raw coffee seed has a horny texture, without the peculiar aroma characteristic of the roasted berry.

The early history of coffee is obscure. It has been in use for over a thousand years. The knowledge of its use was first brought into Arabia from Abyssinia in the fifteenth century. "Its peculiar property of dissipating drowsiness and preventing sleep was taken advantage of in connection with the prolonged religious services of the Mohametans, and its use as a devotional antisoporific stirred up a fierce opposition on the part of the priests. Coffee was by them held to be an intoxicant beverage, and therefore prohibited by the Koran;¹⁷ and the dreadful penalties of an outraged sacred law were laid over the heads of all who became addicted to its use. Notwithstanding the threats of divine retribution, and though all manner of devices were adopted to check its growth, the coffee-drinking habit spread rapidly among the Arabians, Mohametans, and the growth of coffee as well as its use as a national beverage became as inseparably associated with Arabia as tea is with China." Coffee reached Great Britain in the seventeenth century. Charles II. attempted to suppress coffee houses by proclamation, because they "devised and spread abroad divers false, malicious and scandalous reports to the defamation of his Majesty's government and to the peace and quiet of the nation." How different is this view from that held by those interested in good government, peace and prosperity at the present day! We now rejoice in the establishment of coffee houses, hoping that they may supplant the much dreaded rum shops.

It is worthy of note here that the three dietetic beverages treated in this article were all introduced into Europe at nearly the same time. Tea came through the Dutch; cocoa was brought from South America to Spain, and coffee came from Arabia by the way of Constantinople.

Coffee was for some time supplied only by Arabia, but near the beginning of the eighteenth century its culture was introduced into Java and the West India islands. At the present day its culture is general within the tropics, Brazil leading the list in amount annually produced. In the Eastern hemisphere the principal coffee regions are Java and Ceylon, where a superior article is produced. The amount of coffee imported into the United States during the year ending June 30th, 1884, was 534,785,542 pounds, and 18,907,627 pounds in excess of the previous year. It is seen that these figures give nearly ten pounds for each individual in this vast country. This amount per capita is exceeded by only a few countries. Holland leads all European states, with an average of twenty-one pounds per head, followed closely by Belgium, Denmark and Norway.

The dietetic value of coffee depends principally upon the alkaloid caffeine or theine which it contains in common with

tea and cocoa or chocolate. Good coffee contains nearly one per cent. of this substance. When obtained in a pure state it crystallizes in slender needles. The peculiar aroma of coffee is due to the presence of *caffene*,¹⁸ which develops in the process of roasting. It may be isolated as a brown oil, heavier than water, by distilling roasted coffee with water. The roasting of coffee is an operation requiring much good judgment, for by carrying the process beyond a certain point the aroma is destroyed and a disagreeable flavor is produced.

Roasted coffee when ground quickly deteriorates unless kept in close vessels. Mocha coffee, which is brought from Arabia, is the best, and that from Java ranks next. Much of the so-called Mocha coffee is raised in Brazil, or elsewhere, and shipped to Arabia, after which it finds its way into the markets. The berries of the true Mocha coffee are small, dark and yellow; those of Java are a paler yellow, while the West India and Brazilian coffees have a greenish-gray tint. The last named coffee is usually sold under the name of Rio, an abbreviation of the leading coffee exporting port of Brazil, namely, Rio de Janeiro; Martinique and St. Domingo coffees are two other kinds but little known.

Coffee is principally valuable for its stimulating effects upon the system. It produces a buoyancy of feeling, lightens the sensation of fatigue, and sustains the muscles when under prolonged exertion. A cup of rich, hot coffee seems to infuse new life into an o'er-tired body. Equally with tea it is "the cup that cheers, but not inebriates."

"Coffee which makes the politician wise

And see through all things with his half shut eyes."

Coffee is the subject of many adulterations, usually when sold in the ground state. Several kinds of seeds resembling coffee in size have been employed to adulterate the whole coffee, some of which need to be colored before they will pass for the genuine. Many kinds of roots are sliced, dried and roasted for the adulteration of coffee, among the leading ones of which are chicory, carrot and the beet. Spent tanbark and even dried beef's liver have been thus employed. Many of these fraudulent additions can be detected with the microscope. Ground coffee floats on water, while most of the adulterations will sink or discolor the water. There is said to be a machine in England for making false berries out of vegetable substance.

CHOCOLATE.—The chocolate of the shops is derived from a small evergreen tree, native of South America, Mexico, and West Indias. This tree, *Theobroma cacao*, has large, pointed leaves and rose-colored flowers, which are followed by fruit pods six to ten inches long. The first part of the botanical name is from the Greek meaning "food for the gods," and the second or specific word *cacao* is the old Mexican name for the tree. The order Sterculiaceæ¹⁹ to which the theobroma or chocolate tree belongs is not represented in our flora. It however is known to many by a species of *Mahernia*²⁰ from the cape of Good Hope, cultivated in conservatories. The order contains about 520 species, nearly all of which are tropical. The long pods, while green, resemble cucumbers, and when ripe contain from thirty to an hundred seeds, arranged in rows, and of the size of sweet almonds. During the season of ripening the pods are gathered daily, laid in heaps until they have fermented, when they are opened by hand and the seeds spread in the sun to dry, after which they are ready for market. Before the Spaniards visited Mexico the natives made a beverage from the seeds, which they called *chocalat*, and from this we derived our word chocolate. The Spaniards have the credit of introducing this beverage into Europe. In the manufacture of chocolate the *cocoa* (which is a corruption of the original Mexican *cacao*) beans are roasted similar to the roasting of coffee, and after the husk is removed they are reduced to a paste. This paste is afterward mixed with equal quantities of sugar and heated and turned into cakes of vari-

ous shapes familiar to all housekeepers. Cacao nibs are the bruised and broken seeds, and cocoa shells are the thin coverings of the seeds or beans which are separated before the seeds are ground to powder. Broma is chocolate prepared for the market in a certain way, and is a trade name.

The importations of chocolate for the year ending June 30th were 12,235,304 pounds, being an increase of nearly thirty-five per cent. over the previous year.

Of the three leading beverages herein briefly described tea is the only one that has been grown as a crop in the United States. In a reply to an inquiry recently addressed to the

Commissioner of Agriculture, it was stated that the tea plant is hardy at Washington, D. C., and that the tea plantations near Summerville, South Carolina, are doing well. "There is no trouble about growing the plant, but the question of profitable culture for the manufacture of tea is quite another thing. * * * The purpose of the Department of Agriculture * * * is to cheapen the present methods or possibly suggest the placing of the teas on the market in a wholly different shape from what is done at present." We may be able to supply our own demands for tea, but it is not likely that the same will be true of coffee and chocolate.

HOUSEHOLD BEVERAGES.

At the breakfast table of a friend not long ago I heard the gentleman of the house remark over his fragrant coffee:

"I laughed at my wife when she went into the cooking school last summer, I thought her a model cook before; but for some reason she has improved. I never tasted such coffee as this."

My hostess answered: "The reason is simple enough. I had always cooked by rule before. I learned in my studies in cookery to reason. It makes a great difference."

It does make a difference, and never a greater than in preparing tea, coffee and chocolate. There is rarely a cup of any one of these beverages on our tables which is fit to drink; our coffee is bitter and muddy, tea is either insipid or too strong, and chocolate has failed to become the popular drink which it deserves to be, because so rarely well prepared.

Few cooks understand the nature of either the coffee berry or the tea leaf, and consequently do not know how to treat them in order to extract their delicious flavor, aroma, and nerve-bracing qualities.

Few cooks have an idea of the extreme delicacy of these articles, of how scientifically even artistically they must be treated. To extract an oil or flavor is one of the nicest experiments of the laboratory, and one for which a chemist selects his materials with the greatest care, attends strictly to the cleanliness of his vessels, watches every change in temperature, and counts even seconds in time. Making these beverages is nothing less than performing a delicate chemical experiment, and yet we are so ignorant or careless about this important work that we attend strictly to neither heat nor time, and often take just what we can most easily get to work with.

If you would have good tea, coffee and chocolate begin your care with your buying. Tea is a most troublesome article to purchase. There are so many varieties on the market, and so much adulteration that the probability is that unless you are taking extreme precautions you are getting an inferior article. Adulteration is astonishingly common, poor teas being manipulated to make them appear like the first-class grades; inferior black teas colored to look like high-priced green teas, "lie tea" sold in vast quantities, and made-over teas made to pass for fresh. How to obtain the genuine article is the housewife's first problem. Careful examination may be made under the microscope for coloring matter, the tea may be soaked to see if it unrolls into true leaves, or after washing it in a little water the liquid may be tested with chemicals for foreign substances. But all this means trouble that few housewives care to take. Probably the most practical plan is to find by careful experiment a thoroughly reliable tea-house and then confine your patronage to it. A pound of tea bought here and another there, as convenience may dictate or some friend advise, will insure you nothing but adulteration. The only safe plan is to find a house which sells good tea. Your tea bought, it must be prepared. In making a cup of tea the chemical composition and the effect of each step in its preparation must be observed or your draught will be ruined. The constituents in the leaf which you must look after are the theine, the aromatic oil, and

the tannin. Your tea must be treated in such a way that the first two, which give to the drink its flavor and aroma, will be extracted, but that the bitter tannin will be left undeveloped. The theine and oil are both volatile substances, so that if your tea is steeped too long, or if it is boiled, they will literally fly away, while the tannin extracted will turn your cup into a bitter, herby drink. A rule is easily formulated from this bit of science:

Into a perfectly clean tea-pot, just scalded with boiling hot water, put a heaping tablespoonful of tea for each person, and upon it pour a cup and a half of boiling water for each spoonful. Cover your pot with a "cosy" if you have one, and let it stand on the back of the range, where it will not boil, for from five to ten minutes. The length of time required to steep each variety of tea must be determined by experiment, some varieties taking longer than others. The exact length each housewife must determine when she tries a new kind; and it may be said of the exact proportion of tea to water that it as well must be determined by experiment. No rule in cooking is inflexible. It must always be modified by the good sense and the scientific care of the cook.

The English custom of making tea on the table is the prettiest and the most satisfactory. They pour upon the tea required a small quantity of boiling water, this is placed upon the table, covered with the "cosy;" a pot of water taken when boiling from the stove is kept hot by a spirit lamp, and when the tea is steeped as much boiling water as the quantity of tea used demands is poured into the tea-pot. It is allowed to stand about three minutes and then poured into the cups and on the cream. Remember, cream should always be poured into the cups first for both tea and coffee, and tea is as much improved by cream as is coffee.

The purchase of coffee is beset with the same trouble as that of tea—adulteration. You may get a manufactured berry, you may get chiccory; to avoid this careful tests must be applied and only reliable firms patronized. Nothing but unbrowned coffee should be bought; the roasting should be done at home. This process requires particular care. The coffee berry is hard and horny, water has no effect upon it even when it has been ground. It must be roasted in order that certain constituents may become soluble. These constituents are a fragrant volatile oil called caffeone, and the caffeine, which is identical with the theine of tea. By roasting the oil is distributed through the berry and so made soluble, while the caffeine is developed so that it may be absorbed by water. Just the right amount of roasting must be done or the essential constituents will be expelled and the bitter qualities will be made to predominate. I have said that the roasting should be done at home. It may be done in the shops, of course, but the operation there is carried on so unscientifically that the aroma is lost on the town instead of being shut up in the berry. Only a few days ago, passing up a business street of a city, I was astonished to find the air heavy with the delicious aroma of coffee. It scented the air for a square, and only when I came to a large grocery store was the mystery explained. The gro-

cer was browning his coffee, and its odor was serving for an advertisement, effective, perhaps, among the ignorant, but which would warn every wise housewife not to purchase roasted coffee. The process is best carried on in one of the very nearly perfect coffee roasters to be found in the shops; if these are not at hand an ordinary dripping pan may be used. It should be covered to prevent loss of aroma, and should be continually shaken to prevent burning. The entire attention of one person should be given the coffee during this operation. When turned to a rich chestnut brown remove, keeping covered until quite cool. If left open the aroma escapes very rapidly from warm coffee, but if kept covered much of that made volatile by the heat is re-absorbed. A tight dish—an air-tight canister is best—must be ready to keep it in.

When using, grind only what you need, and take care that it is not left coarse, when the strength can not be extracted, or that it is not too fine, when the liquor will be muddy in spite of you; in this, as always, experiment until you know the degree of fineness which ground coffee should have. A heaping tablespoonful of ground coffee to a cup and a half of water is the ordinary proportion for making strong coffee—the only kind which should ever be prepared, by the way, the diluting ought always to take place in the cup; to the required amount of coffee add the white and shell of an egg and cold water to thoroughly wet the whole; stir up these ingredients in your coffee pot and pour upon them the required amount of *boiling* hot water. Let it boil from ten to fifteen minutes, pour in half a cup of cold water and remove to the side of the stove where it can not boil. Do not boil longer than the exact time which you have found necessary for the kind of coffee you are using, if you do you lose your flavor and extract in its place a bitter principle which is ruinous. Remember always what one of our famous cooks says: "There comes a time in baking, frying or broiling when injured nature revolts and burns up, but a thing may boil until not a vestige of its original condition remains, and unless the water evaporates, it may go on boiling for hours without reminding one by smell or smoke that it is spoiled."

Your coffee will settle in about five minutes. Now if you *must* use a different coffee urn, gently pour off the liquor so as not to disturb the grounds. The settling of coffee is an essen-

tial point. The regulation method of stirring an egg into the freshly ground berry is undoubtedly best, but another and more economical practice may take its place. After your freshly roasted berries are cool enough to be easily handled, add to each pound a fresh egg and stir it in until each kernel is coated smoothly with the mixture. Care must be taken that the coffee be not warm enough to cook the egg. When eggs are expensive an economical method is to wash the shells before they are broken, and use with cold water to settle the coffee.

After all these precautions there are still other points to guard. Not the least is the condition of the inside of the coffee pot; it should never be stained, burnt or coated, but kept perfectly bright by being washed, and, if necessary, scoured after each meal. It would be a gain in aroma if your coffee pot could always be kept perfectly tight so that none could escape, and if it could go to the table in the same dish. The pleasant, suggestive odors which precede a meal are always signs that the most delicious flavors of your coming breakfast, dinner or tea are escaping, that through the unskillfulness of your cook you are losing what should give the greatest charm to your meal.

Café au lait^{*} is an excellent drink and easily prepared. Make in the usual way a pint of strong coffee, and into your table urn or a pitcher pour a cup and a half of fresh milk, scalding hot; to this add the coffee and let the whole stand for five minutes in a hot place, or in a kettle of hot water.

Chocolate is a most delicious drink if properly prepared; it is, however, so often raw, muddy and strong that we have not been able to educate ourselves to its peculiar disagreeableness. Make it by the following rule and you will find it both nutritious and pleasant: Select with care the best make of chocolate, and into a little cold water rub smooth five tablespoonfuls of grated chocolate; be sure that it be rubbed in smoothly, a hard particle of chocolate is as unwelcome a visitor in your cup as floating tea leaves or black bobbing bits of coffee berries. So rub it smooth and stir it slowly into five cups of boiling water. Let it boil for about five minutes, and in the meantime heat two cups of milk; this must be stirred into the boiling chocolate and the whole allowed to simmer for a few minutes longer. You may sweeten it on the fire or in the cup.

HUXLEY ON SCIENCE.*

All the time that we are awake we are learning by means of our senses something about the world in which we live and of which we form a part; we are constantly aware of feeling, or hearing, or smelling, and, unless we happen to be in the dark, of seeing; at intervals we taste. We call the information thus obtained sensation.

When we have any of these sensations we commonly say that we feel, or hear, or smell, or see, or taste something. A certain scent makes us say we smell onions; a certain flavor, that we taste apples; a certain sound, that we hear a carriage; a certain appearance before our eyes, that we see a tree; and we call that which we thus perceive by the aid of our senses a thing or an object.

Moreover, we say of all these things, or objects, that they are the causes of the sensations in question, and that the sensations are the effects of these causes. For example, if we hear a certain sound, we say it is caused by a carriage going along the road, or that it is the effect, or the consequence, of a carriage passing along. If there is a strong smell of burning, we believe it to be the effect of something on fire, and look about anxiously for the cause of the smell. If we see a tree,

we believe that there is a thing, or object, which is the cause of that appearance in our field of view.

In the case of the smell of burning, when we find on looking about, that something actually is on fire, we say indifferently either that we have found out the cause of the smell, or that we know the reason why we perceive that smell; or that we have explained it. So that to know the reason why of anything, or to explain it, is to know the cause of it. But that which is the cause of one thing is the effect of another. Thus, suppose we find some smouldering straw to be the cause of the smell of burning, we immediately ask what set it on fire, or what is the cause of its burning? Perhaps we find that a lighted lucifer match has been thrown into the straw, and then we say that the lighted match was the cause of the fire. But a lucifer match would not be in that place unless some person had put it there. That is to say, the presence of the lucifer match is an effect produced by somebody as cause. So we ask, why did any one put the match there? Was it done carelessly, or did the person who put it there intend to do so? And if so, what was his motive, or the cause which led him to do such a thing? And what was the reason for his having such a motive? It is plain that there is no end to the questions, one arising out of the other, that might be asked in this fashion.

* From Science Primers. Introductory. By Prof. T. H. Huxley, F.R.S.

Thus we believe that everything is the effect of something which preceded it as its cause, and that this cause is the effect of something else, and so on, through a chain of causes and effects which goes back as far as we choose to follow it. Anything is said to be explained as soon as we have discovered its cause, or the reason why it exists; the explanation is fuller, if we can find out the cause of that cause; and the further we can trace the chain of causes and effects, the more satisfactory is the explanation. But no explanation of anything can be complete, because human knowledge, at its best, goes but a very little way back toward the beginning of things.

When a thing is found always to cause a particular effect, we call that effect sometimes a property, sometimes a power of the thing. Thus the odor of onions is said to be a property of onions, because onions always cause that particular sensation of smell to arise, when they are brought near the nose; lead is said to have the property of heaviness, because it always causes us to have the feeling of weight when we handle it; a stream is said to have the power to turn a waterwheel, because it causes the waterwheel to turn; and a venomous snake is said to have the power to kill a man, because its bite may cause a man to die. Properties and powers, then, are certain effects caused by the things which are said to possess them.

A great many of the things brought to our knowledge by our senses, such as houses and furniture, carriages and machines, are termed artificial things or objects, because they have been shaped by the art of man; indeed, they are generally said to be made by man. But a far greater number of things owe nothing to the hand of man, and would be just what they are if mankind did not exist—such as the sky and the clouds; the sun, moon and stars; the sea with its rocks and shingly or sandy shores; the hills and dales of the land; and all wild plants and animals. Things of this kind are termed natural objects, and to the whole of them we give the name of Nature.

Although this distinction between nature and art, between natural and artificial things, is very easily made and very convenient, it is needful to remember that, in the long run, we owe everything to nature; that even those artificial objects which we commonly say are made by men, are only natural objects shaped and moved by men; and that, in the sense of creating, that is to say, of causing something to exist which did not exist in some other shape before, man can make nothing whatever. Moreover, we must recollect that what men do in the way of shaping and bringing together or separating natural objects, is done in virtue of the powers which they themselves possess as natural objects.

Artificial things are, in fact, all produced by the action of that part of nature which we call mankind, upon the rest.

We talk of "making" a box, and rightly enough, if we mean only that we have shaped the pieces of wood and nailed them together; but the wood is a natural object and so is the iron of the nails. A watch is "made" of the natural objects gold and other metals, sand, soda, rubies, brought together, and shaped in various ways; a coat is "made" of the natural object, wool; and a frock of the natural objects, cotton or silk. Moreover, the men who make all these things are natural objects.

Carpenters, builders, shoemakers, and all other artisans and artists, are persons who have learned so much of the powers and properties of certain natural objects, and of the chain of causes and effects in nature, as enables them to shape and put together those natural objects, so as to make them useful to man.

A carpenter could not, as we say, "make" a chair unless he knew something of the properties and powers of wood; a blacksmith could not "make" a horseshoe unless he knew that it is a property of iron to become soft and easily hammered into shape when it is made red-hot; a brickmaker must know many of the properties of clay; and a plumber could not do his work unless he knew that lead has the proper-

ties of softness and flexibility, and that a moderate heat causes it to melt.

So that the practice of every art implies a certain knowledge of natural causes and effects; and the improvement of the arts depends upon our learning more and more of the properties and powers of natural objects, and discovering how to turn the properties and the powers of things and the connections of cause and effect among them to our own advantage.

Among natural objects, as we have seen, there are some that we can get hold of and turn to account. But all the greatest things in nature and the links of cause and effect which connect them, are utterly beyond our reach. The sun rises and sets; the moon and the stars move through the sky; fine weather and storms, cold and heat, alternate. The sea changes from violent disturbance to glassy calm, as the winds sweep over it with varying strength or die away; innumerable plants and animals come in being and vanish again, without our being able to exert the slightest influence on the majestic procession of the series of great natural events. Hurricanes ravage one spot; earthquakes destroy another; volcanic eruptions lay waste a third. A fine season scatters wealth and abundance here, and a long drought brings pestilence and famine there. In all such cases, the direct influence of man avails him nothing; and, so long as he is ignorant, he is the mere sport of the greater powers of nature.

But the first thing that men learned, as soon as they began to study nature carefully, was that some events take place in regular order and that some causes always give rise to the same effects. The sun always rises on one side and sets on the other side of the sky; the changes of the moon follow one another in the same order and with similar intervals; some stars never sink below the horizon of the place in which we live; the seasons are more or less regular; water always flows down-hill; fire always burns; plants grow up from seed and yield seed, from which like plants grow up again; animals are born, grow, reach maturity, and die, age after age, in the same way. Thus the notion of an order of nature and of a fixity in the relation of cause and effect between things gradually entered the minds of men. So far as such order prevailed it was felt that things were explained; while the things that could not be explained were said to have come about by chance, or to happen by accident.

But the more carefully nature has been studied, the more widely has order been found to prevail, while what seemed disorder has proved to be nothing but complexity; until, at present, no one is so foolish as to believe that anything happens by chance, or that there are any real accidents, in the sense of events which have no cause. And if we say that a thing happens by chance, everybody admits that all we really mean is, that we do not know its cause or the reason why that particular thing happens. Chance and accident are only *aliases* of ignorance.

At this present moment, as I look out of my window, it is raining and blowing hard, and the branches of the trees are waving wildly to and fro. It may be that a man has taken shelter under one of these trees; perhaps, if a stronger gust than usual comes, a branch will break, fall upon the man, and seriously hurt him. If that happens it will be called an "accident," and the man will perhaps say that by "chance" he went out, and then "chanced" to take refuge under the tree, and so the "accident" happened. But there is neither chance nor accident in the matter. The storm is the effect of causes operating upon the atmosphere, perhaps hundreds of miles away; every vibration of a leaf is the consequence of the mechanical force of the wind acting on the surface exposed to it; if the bough breaks, it will do so in consequence of the relation between its strength and the force of the wind; if it falls upon the man it will do so in consequence of the action of other definite natural causes; and the position of the man under it is only the last term in a series of causes and effects, which

have followed one another in natural order, from that cause, the effect of which was his setting out, to that the effect of which was his stepping under the tree.

But, inasmuch as we are not wise enough to be able to unravel all these long and complicated series of causes and effects which lead to the falling of the branch upon the man, we call such an event an accident.

When we have made out by careful and repeated observation that something is always the cause of a certain effect, or that certain events always take place in the same order, we speak of the truth thus discovered as a law of nature. Thus it is a law of nature that anything heavy falls to the ground if it is unsupported; it is a law of nature that, under ordinary conditions, lead is soft and heavy, while flint is hard and brittle; because experience shows us that heavy things always do fall if they are unsupported, that, under ordinary conditions, lead is always soft, and that flint is always hard.

In fact, everything that we know about the powers and properties of natural objects and about the order of nature may properly be termed a law of nature. But it is desirable to remember that which is very often forgotten, that the laws of nature are not the causes of the order of nature, but only our way of stating as much as we have made out of that order. Stones do not fall to the ground in consequence of the law just stated, as people sometimes carelessly say; but the law is the way of asserting that which invariably happens when heavy bodies at the surface of the earth, stones among the rest, are free to move.

The laws of nature are, in fact, in this respect, similar to the laws which men make for the guidance of their conduct toward one another. There are laws about the payment of taxes, and there are laws against stealing or murder. But the law is not the cause of a man's paying his taxes, nor is it the cause of his abstaining from theft and murder. The law is simply a statement of what will happen to a man if he does not pay his taxes, and if he commits theft or murder; and the cause of his paying his taxes, or abstaining from crime (in the absence of any better motive) is the fear of consequences which is the effect of his belief in that statement. A law of man tells what we may expect society will do under certain circumstances; and a law of nature tells us what we may expect natural objects will do under certain circumstances. Each contains information addressed to our intelligence, and except so far as it influences our intelligence, it is merely so much sound or writing.

While there is this much analogy between human and natural laws, however, certain essential differences between the two must not be overlooked. Human law consists of commands addressed to voluntary agents, which they may obey or disobey; and the law is not rendered null and void by being broken. Natural laws, on the other hand, are not commands, but assertions respecting the invariable order of nature; and they remain laws only so long as they can be shown to express that order. To speak of the violation, or the suspension, of a law of nature is an absurdity. All that the phrase can really mean is that, under certain circumstances the assertion contained in the law is not true; and the just conclusion is, not that the order of nature is interrupted, but that we have made a mistake in stating that order. A true natural law is a universal rule, and, as such, admits of no exceptions.

Again, human laws have no meaning apart from the existence of human society. Natural laws express the general course of nature, of which human society forms only an insignificant fraction.

If nothing happens by chance, but everything in nature follows a definite order, and if the laws of nature embody that which we have been able to learn about the order of nature in accurate language, then it becomes very important for us to know as many as we can of these laws of nature, in order that we may guide our conduct by them.

Any man who should attempt to live in a country without reference to the laws of that country would very soon find himself in trouble. And if he were fined, imprisoned, or even hanged, sensible people would probably consider that he had earned his fate by his folly.

In like manner, any one who tries to live upon the face of this earth without attention to the laws of nature will live there for but a very short time, most of which will be passed in exceeding discomfort; a peculiarity of natural laws, as distinguished from those of human enactment, being that they take effect without summons or prosecution. In fact, nobody could live for half a day unless he attended to some of the laws of nature; and thousands of us are dying daily, or living miserably, because men have not yet been sufficiently zealous to learn the code of nature.

It has already been seen that the practice of all our arts and industries depends upon our knowing the properties of natural objects which we can get hold of and put together; and though we may be able to exert no direct control over the greater natural objects and the general succession of causes and effects in nature, yet, if we know the properties and powers of these objects, and the customary order of events, we may elude that which is injurious to us, and profit by that which is favorable.

Thus, though men can nowise alter the reasons or change the process of growth in plants, yet having learned the order of nature in these matters, they make arrangements for sowing and reaping accordingly; they can not make the wind blow, but when it does blow they take advantage of its known powers and probable direction to sail ships and turn wind-mills; they can not arrest the lightning, but they can make it harmless by means of conductors, the construction of which implies a knowledge of some of the laws of that electricity of which lightning is one of the manifestations. Forewarned is forearmed, says the proverb; and knowledge of the laws of nature is forewarning of that which we may expect to happen, when we have to deal with natural objects.

No line can be drawn between common knowledge of things and scientific knowledge; nor between common reasoning and scientific reasoning. In strictness all accurate knowledge is science; and all exact reasoning is scientific reasoning. The method of observation and experiment, by which such great results are obtained in science, is identically the same as that which is employed by every one, every day of his life, but refined and rendered precise. If a child acquires a new toy, he observes its characters and experiments upon its properties; and we are all of us constantly making observations and experiments upon one thing or another.

But those who have never tried to observe accurately will be surprised to find how difficult a business it is. There is not one person in a hundred who can describe the commonest occurrence with even an approach to accuracy. That is to say, either he will omit something which did occur, and which is of importance, or he will imply or suggest the occurrence of something which he did not actually observe, but which he unconsciously infers must have happened. When two truthful witnesses contradict one another in a court of justice, it usually turns out that one or other, or sometimes both, are confounding their inferences from what they saw with that which they actually saw. A swears that B picked his pocket. It turns out that all A really knows is that he felt a hand in his pocket when B was close to him; and that B was not the thief, but C, whom A did not observe. Untrained observers mix up together their inferences from what they see with that which they actually see in the most wonderful way; and even experienced and careful observers are in constant danger of falling into the same error.

Scientific observation is such as is at once full, precise, and free from unconscious inference.

Experiment is the observation of that which happens when we intentionally bring natural objects together, or separate

them, or in any way change the conditions under which they are placed. Scientific experiment, therefore, is scientific observation, performed under accurately known artificial conditions.

It is a matter of common observation that water sometimes freezes. The observation becomes scientific when we ascertain under what exact conditions the change of water into ice takes place. The commonest experiments tell us that wood floats in water. Scientific experiment shows that, in floating, it displaces its own weight of the water.

Scientific reasoning differs from ordinary reasoning in just the same way as scientific observation and experiment differ from ordinary observation and experiment—that is to say, it strives to be accurate; and it is just as hard to reason accurately as it is to observe accurately.

In scientific reasoning general rules are collected from the observation of many particular cases; and, when these general rules are established, conclusions are deduced from them, just as in everyday life. If a boy says that "marbles are hard," he has drawn a conclusion as to marbles in general from the marbles he happens to have seen and felt, and has reasoned in that mode which is technically termed induction. If he declines to try to break a marble with his teeth, it is because he consciously or unconsciously performs the converse operation

of deduction from the general rule "marbles are too hard to break with one's teeth."

You will learn more about the process of reasoning when you study logic, which treats of that subject in full. At present, it is sufficient to know that the laws of nature are the general rules respecting the behavior of natural objects, which have been collected from innumerable observations and experiments; or, in other words, that they are inductions from those observations and experiments. The practical and theoretical results of science are the products of deductive reasoning from these general rules.

Thus science and common sense are not opposed, as people sometimes fancy them to be, but science is perfected common sense. Scientific reasoning is simply very careful common reasoning, and common knowledge grows into scientific knowledge as it becomes more and more exact and complete.

The way to science then lies through common knowledge; we must extend that knowledge by common observation and experiment, and learn how to state the results of our investigations accurately, in general rules or laws of nature; finally, we must learn how to reason accurately from these rules, and thus arrive at rational explanations of natural phenomena, which may suffice for our guidance in life.

THE CIRCLE OF THE SCIENCES.

Science means classified knowledge. There may be much general knowledge that is not science. It attains to that dignity only when the particular facts known are generalized, and arranged in some order, instead of being jumbled together, and lying about loosely in the memory, to be taken up at random. Especially must the basal facts of the science be verified, not assumed.

Information that is general and assured, though as yet lacking system and a proper ordering of the elementary facts, may, and usually will in time advance to the dignity of science. History warrants this expectation. Only let not the boast be made, or the honor conferred prematurely. Geography, chemistry, and political economy are all now sciences. The first has been recognized among the sciences from an early day, though it has advanced rapidly during the present century. The last two are comparatively new members, having held their place in the "Circle" scarcely a hundred years. True, many of the facts of chemistry, and the principles of political economy had been known for ages, but the knowledge men had of them lacked either system or certainty, or both. So, also, in respect to mineralogy, botany, and zoölogy, a store of known facts had been for ages accumulating, before they could rightly be called sciences. To reach that distinction the quality and orderly arrangement of the things known are as necessary as the quantity.

In the heading of this series of articles, "Circle" does not suggest the rim of a wheel, or a curved line all the points of which are equally distant from the center around which it is drawn, but rather a group of sciences, just as "social circle," and "circle of friends" indicate the amicable relations of the persons without saying anything of their positions in the place of their meeting. It is a goodly group, this family of the sciences, and the members now so numerous and having such distinctive characteristics will be introduced, not as a body but severally, and in five classes: The Mathematical, Physical, Mental, Moral, and Social Sciences. They hold such intimate relations with each other, mutually giving and receiving aid, that we will not attempt to keep the members of classes from mixing occasionally in our account of them, as they often do in reality.

Mathematics is the science of quantities and numbers. Its principles are of the first importance, and are of service in all the departments of science. In several of its subdivisions, of which brief mention will be made, it uses known quantities for the determination of those unknown, reasoning from certain relations existing between them. The qualities it discusses are represented by diagrams, figures, or symbols, adopted for the purpose. It is customary to speak of *pure* and *mixed*, or *abstract* and *applied* mathematics; the former treating of laws, principles, and relations in the abstract, or without any special reference to anything as actual or existing. The latter discusses the principles, laws and relations in connection with existing phenomena. The operations with numbers and symbols in pure mathematics, dealing only with abstract quantities, do not necessarily imply the idea of matter. Those of the science as applied have much to do with material phenomena. The elements that enter into the calculations in both cases are axioms or self-evident truths, things that are known intuitively, or grasped by the reason soon as presented, only in applied mathematics, used more or less in all sciences, these same axiomatic, self-evident truths are employed in the discussion of natural objects, the laws, properties, and relations of which are learned mostly by experience and induction.

The sciences classed as pure mathematics are Arithmetic, Geometry, Algebra, Analytical Geometry and Calculus. Arithmetic is eminently the science of numbers, and treats of, or practically illustrates their nature and uses. It employs the nine Arabic digits or figures with the addition of the cipher, giving them various positions to express numerical values, and not the native qualities or functions of the things to which they are applied. The methods are the same, and the results obtained equally true, whatever may be the nature of the quantities about which inquiry is made. The elementary or fundamental idea in arithmetic is unity, expressed by the figure 1, from which, with the help of the other eight digits, and the individually valueless cipher, 0, expressions for all the other values, whole or fractional, are formed.

As arithmetical processes underlie, or enter into, the work of nearly all mathematical calculations, its great importance as a science is evident; though as often taught in our schools and

used in business, it is simply a method of reckoning or computation.

Algebra is a kindred science, that, by the use of letters and symbols, enables us to solve more readily all difficult questions relating to numbers. It is, indeed, a kind of universal arithmetic. In the ordinary arithmetic the numbers or figures employed, taken separately, have always the same value, and the result, when, sometimes by a tedious process, obtained, is applicable only to the particular question proposed, but in solving the problem by algebra, since we employ letters to which any values may be attributed at pleasure, the result obtained is largely applicable to all questions of a particular class. Thus, having the sum and difference of two quantities given, we readily obtain an algebraic expression for the quantities themselves. By the new method the goal is reached speedily, and the cabalistic terms, that may, at his first attempts, perplex and discourage the young student, become his delight; and in many difficult processes greatly shorten the work, enabling him with ease to solve problems that to the common arithmetician are tedious, if not impossible.

Geometry, one of the oldest of sciences, measures extension, treats of order and proportion in space. Its working elements are not numbers or symbols, but points, and lines, either straight or curved, and surfaces, with volumes, or solids. The simpler problems, when successfully demonstrated, are used in solving those more complicated, making the progress easy.

Lines are made up of points, and have extension only in one direction. Surfaces have length and breadth, and are distinguished as triangles, quadrilaterals, polygons, etc., according to the number of lines that circumscribe them. Solids have length, breadth, and thickness. From a few elementary facts, much geometrical science has been deduced, by very simple, logical processes. It is intimately related to other sciences, and of much practical importance; but, if there were no other advantage derived, as a discipline of the reasoning faculty there can be nothing better. To pursue the study profitably there is little need of an instructor. Class recitations are helpful, but let any one intent on personal culture, and having only a little time for the work, get a good elementary treatise on plane and solid geometry, and study it. The exercise will become a delight, will give strength and grip to the faculties, and furnish protection against the mental dissipation caused by spending much time in the hasty, careless reading of what is fitly called light literature.

Analytical geometry is that branch which examines, discusses and develops the properties of geometrical magnitudes by the use of algebraic symbols. The questions or problems are solved, not, as in plane geometry, by diagrams or figures drawn to show certain relations of magnitudes, but by making algebraic symbols represent them, and thus solving the problems. Analysis is much used in simple algebraic processes, but more in analytical geometry, and in differential and integral calculus, which has been called the transcendental analysis. It is useful as a higher branch of the science, and without it the best achievements of the greatest mathematicians would scarcely have been possible. These last named branches are generally best pursued in our higher academies and colleges. A college course would be sadly deficient without them, but only for exceptional cases would it be advisable to put them in a course of study to be pursued privately.

If this brief mention of the higher mathematics kindles desire for further knowledge, and you hesitate to grapple with them alone, by all means go to college, and after a proper introduction, wherein the chief embarrassment is felt, even calculus will be found an agreeable acquaintance.

Under the head of "Mixed Mathematics," applicable to both laws or abstract principles and facts, the discussion of things as actual and possible, we have first, mechanics, the science that treats of the various forces and their different effects. By force

is meant any power that tends to prevent, produce, or modify motion. Three are recognized—(1) gravitation, or the attraction of bodies toward each other; (2) the cause, whatever it may be, of light, heat, and electricity; (3) life, an equally mysterious power producing the actions of animals and the growth of plants. These forces, though entirely unseen and their causes unknown, are definite quantities. We readily conceive of one force as equal to, or greater than another, and know that equal forces, applied in opposite directions, balance each other. To everything that moves there is force applied greater than the resistance to be overcome. A number of forces may act on an object at the same time, accelerating, retarding, or changing the direction of the motion given to it. When the forces are so balanced as to hold the body on which they act in a state of equilibrium, their action and consequent phenomena are investigated under the head of *STATICS*, or the science which treats of bodies at rest. When motion is produced, *DYNAMICS* considers the laws that govern the moving bodies and the phenomena that result. These branches of mechanical science are of great practical importance, and a knowledge of them would save from many blunders and failures resulting from incompetence. The same laws govern in the movement of all bodies, whether solid or liquid. Hydrostatics, Hydrodynamics, Hydraulics, etc., are branches of the same science, and worthy of separate mention only because they apply the general principles of statics and dynamics to the phenomena of rest or motion in liquids. The foundation for all that is peculiar in these branches with the lengthened names, and that together may be called *Hydro-mechanics*, lies in the properties that distinguish the liquid from other states of material bodies, whether gaseous or solid, viz.: in the presence of cohesion, but with great mobility of parts and more or less elasticity. Some peculiarities are so noteworthy as to deserve mention even in this limited presentation. Because of the only slight cohesive attraction, and entire freedom of motion among the particles, liquid bodies possess no definite form of their own, but adapt themselves to the form of the excavations or vessels containing them. They, of course, vary much in their fluidity, the mobile liquids, as water and alcohol, flowing more readily than molasses, heavy oils, and tar. Fluids at rest press equally in all directions, upward, downward, and laterally. In this, also, they differ from solids that press only down, or in the direction of the center of gravitation. If not confined they can not be heaped up, but their particles seek a common level. An absolute water level is, of course, possible only when the area covered is so limited that lines joining all the points on the surface with the center of gravity are practically parallel, or their convergence an inappreciable quantity. In large bodies of water, as the ocean, the surface corresponds with the general rotundity of the earth.

The fact of the equal pressure of liquids in all directions, and with the same intensity, is found of great importance in practical mechanics. The strong pressure of a small column of water is finely illustrated by simple experiment with the water bellows, or hydraulic paradox, in which one pound of water in a tube lifts a hundred pounds on the top of the bellows, and the greater the disproportion between the diameter of the tube and that of the top of the bellows, the greater weight it will raise. More than two hundred years ago Pascal showed the enormous pressure exerted by a lofty column of water in a small tube. A strong cask was filled with water, and a small tube forty feet high closely fitted in its head, when a few pints of water poured into it burst the cask, and would have done so if it had been made of the strongest oaken staves and bound with hoops of iron. This is the power used in the hydraulic press, a very simple machine of much value in the industrial arts when there is a demand for great force that can be slowly and steadily applied, as in compressing cloth, oil cake, paper, gunpowder and numerous other things. Its parts are so few that it can be described without a model to repre-

sent it. A small, upright cylinder, with a closely fitting piston used as a pump to draw and force the water, and connected at the base by a tube with a much larger cylinder directly under the substance to be pressed, in which there is also a piston to be moved upward, though water tight. The whole is secured in position by powerful frame work. Beneath the piston the water is received. And knowing the principles of hydrostatics we can estimate its power. If the areas of the lower surfaces of the two pistons are to each other as one to four hundred square inches, one pound pressure on the small one will deliver to the lower surface of the large one a pressure equal to four hundred pounds weight. But let the arms of the lever used as the force pump handle be to each other as one to fifty. Then when a force of fifty pounds is applied at the end of the long arm of the lever it will descend with a force of $50 \times 50 = 2,500$, and there will be delivered on the lower surface of the large piston a power to raise it expressed by $50 \times 50 \times 400 = 1,000,000$. Some allowance must be made for friction or other impediments, say one fourth, which is more than enough, and still a man or boy at the end of that pump handle would be able to lift at least three hundred and seventy-five tons.

The sciences we have been considering under the general name of mechanics, which is derived from a Greek word that means to contrive, invent, construct, have much to do with machinery, with the methods of construction, the propelling forces, and the phenomena produced. There were machinists and some simple machines propelled by human or brute force, by weights and springs, by falling or running water, and air in motion before the laws of motion and forces were understood, or the rude mechanic arts began to assume the character of a science. The machines were, of course, imperfect, and lacked efficiency, while many of those now in use seem nearly perfect and adapted to the work expected of them. But notwithstanding the marvelous advance that has been made in the manufacture of machinery, and the intelligent application of mechanical powers, we look for still greater things as possible in the future.

It is well, however, never to forget that whatever the seeming may be, the most perfect machine of human invention does not create force. That is as impossible for man as it is to give life or create matter. All he can do is to collect, concentrate and use, to the best advantage, the forces that exist. He may by skillful appliances gain a great mechanic advantage, and overcome very formidable resistance, but he must be content to do it very slowly; and it has been often said that "what he gains in power he loses in speed." In many cases this seems a necessity, and he must submit to it. His simplest machine, if the fulcrum is placed very near the weight, gives a man tremendous power gained by his position at the long arm of the machine. But the point at which he applies the force must move much faster and a greater distance than the object against which it is directed. So when a man with a system of pulleys raises to the top of a tower a block of granite that four men might lift from the ground he sacrifices in speed what he gains in the new way of applying the force he has for the purpose.

You visit a large manufacturing establishment or the mechanical department of a great national or international industrial exposition and see a whole acre of machinery of all kinds, shafts, wheels, saws, lathes, and spindles in rapid motion, and, astonished at the complications, inquire for the power that carries the whole. You will possibly find it is in some remote part of the premises, and shut up in the motionless boiler where the steam is said to be generated, which only means that the water heated expands and struggles to escape from its confinement, while man understanding the laws of its action manages to liberate the force under conditions that make it his servant.

The science of numbers and magnitudes, useful in discussing the distances, measurements, and motions of terrestrial bodies, is especially so in its application to astronomy.

Astronomy as a physical science will receive consideration in the next number; here only the mathematical elements are noticed, and they are everywhere manifest. The same general laws control all material bodies, those near to us, and those seen at a distance. So the science of the stars is not now mere theory, but has all the elements of mathematical certainty. When dealing with such vast numbers and magnitudes as engage the astronomer's attention, with a few known principles or laws, and abundant recorded telescopic observations for the basis of their work, men can calculate even more accurately than they can count or measure. Having once prepared their theorem, aided by the logarithms of Napier¹ that simplify and shorten the more difficult arithmetical calculations, they can readily determine the distance, magnitude and motions of a planet, and know that it is done with sufficient exactness. The distances of the heavenly bodies are generally determined by their parallax, that is the difference between the directions of the bodies as seen from two different points. The inclination of the lines thus drawn is the angle of parallax. By supposing the lines prolonged to the sun, and other lines drawn through the points selected to the center of the earth a quadrangle is formed, all the angles and sides of which are easily found. In measuring very minute parallaxes it may not be possible to determine the exact position of the body as projected on the celestial sphere, but in that case recourse can be had to relative parallax, or the difference between the parallaxes of two bodies lying nearly in the same direction. The best opportunity for this is afforded by the transit of Venus, and on this account great interest is felt in that phenomenon, and extensive preparations are made for taking accurate observations.

The figure, size and density of the celestial bodies have all been calculated with approximate certainty. The orbits, through which they pass in their revolutions, described, and their velocities ascertained.

There is a solar system of which the sun is the center, and in its relation to the planets stationary, though really moving on through infinite space; the orbits through which planets move are not circles, but more or less elliptic, having the sun at one focus of the ellipse.

That planets move in ellipses was announced by Kepler² as the first law governing their motions, and a second deduced from this and confirmed by observations, is that they do not move with equal velocity in all parts of their orbits; and that *a line drawn from the center of the earth to the center of the sun passes over equal spaces in equal times*. He also found as a third law that *the squares of the times of the revolutions of the planets are proportional to the cubes of their mean distances from the sun*.

Navigation shows how vessels are directed in their course upon the great waters. In proportion as the "paths of the seas" have become open, safe and free for all, they are found paths of knowledge and civilization. The science, small at its beginning, has grown to its present advanced state by slow degrees, helped by contributions from the most opposite sources. Practical but uneducated seamen have doubtless done much, as their ingenuity is often, in emergencies, taxed to supply means of safety and success that are wanting. More has been contributed by scholars, secluded philosophic men whose lives are spent "in communion with the skies," in observing the motions of the heavenly bodies and studying the laws by which they are regulated. But perhaps the most valuable service has been rendered by another class who combine an experience of the sea with much knowledge of astronomical science, men acquainted with the needs of seamen and qualified to meet them. The introduction of the mariner's compass early in the fifteenth century was an epoch in the history of navigation, as it made seamen in a measure independent of the sun and stars. This was an incalculable advantage, as soon became apparent to those who adopted the compass as

their guide. Of the many improvements and helps in the science of navigation we can only name, as conspicuous, the invention of Mercator's chart³ in 1569, Davis's quadrant⁴ about 1600, and Hadley's quadrant a century later. The character of the instruments and a glance at the Nautical Almanac will show how largely both mathematics and astronomy enter into the science of navigation. Nor is it quite safe to take passage with a shipmaster who has but limited knowledge of either. He should at least thoroughly understand his instruments and be a ready, accurate computer.

Geometry grew out of the practice of surveying, and now embodies many of the laws and principles of the science. There are several distinct systems of surveying, classed according to the purposes contemplated. It is astronomically employed in determining the figure of the earth by the actual measurement of arcs. A fair knowledge of mathematics and trigonometry is required in what are known as coast surveys. Land surveying is of the plainest kind, and employed in finding the contents of areas, or in dividing large tracts into lots of smaller dimensions. The chief difficulty is in getting the exact bearing of the lines and the measure of the angles when the plot is an irregular polygon.

Topographical surveying, beside the measurement of lines and angles, takes note of variations of level, that the draft may properly represent superficial inequalities. Maritime surveying is an important branch, fixing the positions of shoals, rocks and shore-lines. Mine surveying determines the loca-

tion of works in the mine and decides whether the excavations conform, as required, to lines on the surface. The compass and chain are the surveyor's most common instruments, but others are used according to the nature of the surveys to be made. Incompetency or carelessness in surveys often occasions serious trouble and loss.

Fortifications for the defense of cities and the protection of soldiers are as ancient as the existence of armies. The former, built in time of peace, of such form and materials as military science and experience suggest, are called "permanent fortifications;" and the temporary works constructed as the exigencies of a campaign require are "field fortifications." The art and science have been practiced and studied in all ages, and there is now an immense literature on the subject.

As methods of defense must be adjusted to those of attack the earlier permanent fortifications, in the progress of society and after the introduction of artillery, became nearly worthless. High stone walls are a protection while they stand, but, however strong, they can be battered down by heavy siege guns that have less effect when directed against earth works, which seem less formidable. A place thoroughly fortified is seldom taken by a sudden assault. The United States have fortified less than most of the great European nations, but are by no means defenseless. Previous to 1860 there had been expended on our forts more than \$30,000,000; and all the exposed positions have been greatly strengthened within the last twenty-five years.

End of Required Reading for February.

THE POET'S VISION.

BY MARY A. LATHEURY.

My Lady Lily, the waters sleep,
And the winds are among the clover;
Would I could hear the tale you told
The Poet once, till with voice of gold
Singing it over and over

He came to the court and cried, "O king,
My song of thy state and glory
Is dead on my lips! I am done with strife,
And courts, and conquests. A song of life
I have learned from a water lily."

"Carol us then thy pretty song,
Sir Poet!" the king cried, sneering;
So standing stateliest of them all
The length of the royal banquet hall,
And flinging a look unfearing,

Full on the king and his court, who sat
Smiling in fine derision,
He sang or chanted as chants a seer
When sense is fading, and draweth near
The high beatific vision.

He sang of life in the soil of death,
A seed of a heavenly sowing;
Asleep in the murk and mire of earth,
In silence waiting its wondrous birth,
Of death or of life unknowing.

He sang of the Sun of Life—His quest
In our death-deeps dark and chilly;
Of love that quickens to life the dead,
As the sun rays seek in the river-bed
The germ of the water lily.

He sang of Faith—of the eye that seeks
With a sightless aspiration
The source of Love and the fount of Light,
Till far in the folds of the utmost night,
Storm-swept with fierce temptation,

A light breaks through like a faint white star,
That grows and grows like the dawning,
Till, veiled in vapors, it hangs above
The wakened soul as the face of Love,
And Life has begun its morning.

He sang of Life in the spring o' day,
Of patience, and truth, and duty,—
The narrow ways to the full release,
When, lapped in light and a dream of peace,
It bursts as a flower to beauty.

He sang—and his words fell thick and fast—
Of the resurrection glory;
Of good from evil, of life from death,
And then, with hesitant, bated breath,
The God-man's marvelous story.

Then silence fell on the king and court,
And out through the open portal
The poet passed with a solemn stride
Into the midnight spaces wide,
Or into the life immortal.

My Lady Lily, you will not wake,
Wrapped in your dreams Elysian,
But this is the mystic tale you hold,
Deep in your tremulous heart of gold;
And this was the Poet's vision.

THE HOMELIKE HOUSE.

BY SUSAN HAYES WARD.

CHAPTER II.—THE FAMILY PARLOR.

From the gay world we'll oft retire
To our own family and fire,
Where love our hours employs;
No noisy neighbor enters here
No intermeddling stranger near,
To spoil our heartfelt joys.

—N. Cotton.

The room which above all others should be furnished with the most loving thought and lavish expense is the household parlor, or family sitting room. Here the father reads his evening paper, the mother busies herself with her ready needle, the children "with books, or work or healthful play." This should be to eye and body preëminently a restful room, commodious, cheerful. If the reception room for visitors needs the cheer of firelight, how much more the *living room* of the household.

Whittier's description of the homely comfort of an old New England farm house remains unexcelled in the literature of house furnishing:

"Shut in from all the world without
We sat the clean-winged hearth about,
Content to let the north wind roar
In baffled rage at pane and door,
While the red logs before us beat
The frost line back with tropic heat;
And ever, when a louder blast
Shook beam and rafter as it passed,
The merrier up its roaring draught
The great throat of the chimney laughed.
The house-dog on his paws outspread
Laid to the fire his drowsy head,
The cat's dark silhouette on the wall
A couchant tiger's seemed to fall,
And, for the winter fireside meet,
Between the andiron's straddling feet
The mug of cider simmered slow,
The apples sputtered in a row.
And, close at hand, the basket stood
With nuts from brown October's wood.
What matter how the night behaved?
What matter how the north wind raved?
Blow high, blow low, not all its snow
Could quench our hearth-fire's ruddy glow."

For the sake of restfulness to the eye, the walls and carpet should be neutral in tone, making a good background to the family figures; the wall paper being of a good all-overish pattern that will not detract from pictures that may hang on it, and the carpet or rug well mixed, of not too loud a pattern, and without strong contrasts of light and dark. Blue wall papers are hard to deal with, but creams, fawns, soft greenish or olive-grays, and simple leaf patterns with slight variations of color or shade are all good for walls that are to be hung with pictures, as a sitting room should be. Common butchers' paper, put on in sheets, the better textured cartridge paper, or sheathing paper with a pretty variation introduced by way of frieze or dado are all restful to the eye and good for the sitting room walls. The greens used should not be sharp and crude, but should be modified, making them yellowish, bluish, or grayish. So with reds, which will be better yellowish, slightly bluish (not purplish), or brownish; and yellows which must

be modified into creams, old-golds, or fawns. This rule is for large surfaces. A little pure, bright color can be introduced here and there by way of decoration, and must appear somewhere in the room if it is to have a cheerful look, but wait till your pictures are hung before you introduce much brilliant color. It may take the life out of them. Picture-rods are a great convenience, and, after the first expense, save much trouble, and much marring of walls by driving nails. The picture-rod should run below the frieze, and a box of picture-hooks of suitable size for the rods should be kept ready to hand, and picture-wire so that a new painting or engraving when it comes home may find its place at once and not stand on the floor for a month waiting till the master can drive a nail. As for the wall decorations, there should be a looking-glass for family convenience either in this parlor or the entry way (the parlor is the better place), and the best pictures the house affords, always making sure that they are good pictures. Better always a good photograph, or wood-cut, or etching, than a poor chromo, steel engraving, or water-color; and better, a hundred fold, a good water-color than a poor oil painting. If your family portraits are poor, consign them to the garret or the upstairs hall, but, if possible, have at least one good painting in your home-room, even if it does cost money; and remember that a first-hand sketch by a good living artist is better than a second-hand copy of an old master. But one good painting in a house, whether a copy or an original, is a continual art lesson. A woman of taste will not mix all manner of pictures together on one wall. If possible, she will keep oil paintings by themselves, and not put them in juxtaposition with water-colors—nor will she put a picture suited only to a gallery in a family sitting room. Nor will she put Bacchantes in the same group with worshipping cherubs. There is a vast deal of stuff purely ephemeral that women are apt to load their walls with—Christmas, New Year, Easter and birthday cards, and painted panels, which may do very well to exhibit during the holidays or the day or two after the birthday; then, having had their day, they should cease to obtrude if not to be. There should be a box or receptacle for all this clutter; such souvenirs are admirable for their suggestions to the amateur decorator or embroiderer of the family, but they should not be allowed to spot the walls, to hang from the side brackets or to decorate the looking-glass. "God bless our home" is a devout aspiration which is better carried out in a godly life than worked in cross-stitch and hung over the sitting room door. I have seen Scripture texts deftly inwrought into the mural decoration of a sea-side cottage, verses from the sailors' Psalm being painted in a decorative way between border lines of frieze or dado, where they did not seem out of place, but the summer boarders were well nigh driven from another cottage because of a card-board abomination hung over the mantel piece of their sitting room, with indigo clouds and grass-green waves, with a three-quarters-length Christ in all colors of the rainbow uttering the magic words worked in shaded reds—"Peace, Be Still." The matter of mottoes has been overdone, and it is always safe to leave them out altogether.

Paintings upon plush must be exceedingly good to make them worth hanging anywhere. Usually such decoration is a waste of expensive material. Any way, plush is too easily spoiled by dust or careless handling to make it welcome in the family room. Painting upon picture and looking-glass frames is another misuse of decoration. A London artist with rare ingenuity paints a stalk of lilies to hide a flaw in his hall mir-

ror, and straightway the "Decorative Art" salesrooms all over our land effloresce with blooming mirror frames whose unpruned vines straggle and trail over every glass. The beauty of a mirror is to have it absolutely clear and free from dust and dirt, finger marks or paint blotches, throughout its entire surface. Flower painting in polychrome upon frames and easels is utterly out of place, as it calls the eye off from the picture which the frame or easel holds, and reminds one of a servant decked out in finery surreptitiously borrowed from her mistress's wardrobe.

Marble mantel pieces, to be good, must be expensive. A simple pine mantel piece with a little incised ornament is far better than white or cold gray marble. Raised, stuck-on ornament is objectionable, whether in wood or stone, but mantel pieces, book-cases and cabinets give a fine opportunity for domestic carving, and one can but wonder that more home ingenuity is not expended on the construction and carving of mantels and other woodwork in our rooms, such as doors and windows. I have seen a wooden mantel piece small, plain, and somewhat cheap and inferior-looking, so improved by a little carving, judiciously introduced by the man of the house—a small panel set in here, and the edge of the shelf prettily finished—that the whole thing grew dignified at once and became a worthy ornament of the "spare room," when painted in harmony with the rest of the woodwork. The youngest whittlers might be taught to use tools for the family good, if parents were only willing to go to a little trouble and expense in providing models, tools and wood for their use, and a comfortable chimney nook where the work could be carried on. In the schools of Philadelphia Mr. Leland has shown how much may be done by boys and girls when their efforts are wisely directed.

When there is no room in the house specially set apart as a library, cabinets and book cases form an important part of the sitting room furniture. I would have book shelves of some sort in every room of a house; but in the room where the family gathers there should be a special shelf for books of reference. An encyclopædia is of as much value to the household as a wood lot is to the farm. Better wear your old silk gown or shabby overcoat another year, or two years even, and have your book of reference always at hand for the general good. The unabridged dictionary is a necessity, and should stand in its rack easy of access to school children and their elders as well. A household book of poetry, Dana's or Bryant's, or whatever may be better, and an equally comprehensive volume of religious verse like Gilman's, or Palgrave's choice "Golden Treasury," should be well thumbed by the children, and should be placed temptingly at hand, not locked behind glass doors. Glazed doors are demanded by collectors who revel in vellum, uncut leaves, and rare editions, but cases that are well backed and that have leathern, or even moreen or flannel, valences tacked to the shelves, will serve well enough to protect books in a house where all the reading matter is for daily use or study.

A low book case three or four feet high and broad enough to fill a generous wall space, running, if need be, across one side of the room, may be found ample enough for a family whose library is limited. Pictures and vases can be ranged upon its top. I know a room that holds three or four such book cases of ebonized pine, filled with books and made gay with valences of scarlet moreen, which yet scorns to be called "the library," and is only known as the family "sitting room." Valences of leather or wool are sufficient to protect the books from dust if the cases are well backed.

In addition to the book case, hanging shelves for children's books, or cabinets for collections of any sort, can be made of pine, and when absolutely plain, if neatly varnished, need not prove unsightly. They may even be made very ornamental by a bright curtain, plain or embroidered, with rings attached that run lightly over a brass rod or wire, and screen the contents of the shelves from the too inquisitive eye.

It is really a happy day for a household when one of its members develops a hobby and begins to make a collection—not of buttons or business cards, but of something on which genuine study will not come amiss, and there is hardly any line in which one is likely to interest himself where he may not often pick up for a mere trifle much that will be of special value to his collection, much that, by itself, would be comparatively worthless, but which in a collection has added worth and dignity; and any collection makes a new point of interest in a home. In a quiet country town where I once lived, the boys of the village took to collecting butterflies and insects. Farmers carried turpentine or benzine in their pockets, and would come home from their haying fields with hats gay with the captured moths and butterflies they were taking to the collectors of their several households. Thus homes hitherto utterly wanting in any æsthetic influence, seemed to brighten into something positively charming, when father and mother, son and daughter clustered about the drawers in the front parlor, exhibiting to any chance visitor the fragile treasures so carefully arranged within them, and when a new specimen was captured the collector would

"Run it o'er and o'er with greedy view,
And look and look again, as he would look it through."

Think of the many lines in which the collector may work! The postage stamp craze was by no means to be despised; it was a good geography lesson for the children, and well up to the times, throwing in a little history as well. Coin collecting is yet more profitable in the same lines, and when confined to the coins of one's own land, gives a wide enough range for the average collector. For the out-of-door student there are shells, sea mosses and birds' eggs, flowers to press, and minerals to secure. One boy hunts up Indian relics, another collects weapons of various sorts, from

"The old queen's arm which Gran'ther Young
Fetched back from Concord, busted,"

to an Australian boomerang or a South Sea Island club brought by the sailor uncle from some voyage of long ago. One dear, old lady has a choice collection of bits of lace all dated and named; another of pieces of brocade, an admirable commentary on silk manufactory. Here we find a treasurer of fans, and there of snuff-boxes; here of children's photographs, and there of photographs or autographs of famous men; and everywhere, all over our land, will be found the covetous collector of rare, old china and pottery. Let the children be encouraged to interest themselves in some such lines as these, not so as to make nuisances of themselves and museums of their homes—there will be little danger of that—but enough to give them a wholesome enthusiasm in some particular line of study. A vast deal of general information is disseminated through a household, unconsciously absorbed, as it were, when each one has a hobby of his own, and gives out of his choicest discoveries for the common good.

As to the sitting room furniture, there are a few essentials that must be emphasized. There should be a table large enough for half a dozen people to sit around of an evening—a round one is best—strong, solid, and covered with a serviceable cloth. There are handsome woollen table covers that grow yet handsomer with age as their colors mellow together, but the best is expensive. A square of plain felt does very well, and is in better taste than the scarlet and green felt cloths stamped with black figures that were so prevalent twenty years ago. A figured cloth shows spots less than a plain one. If a mat of some sort, or even a newspaper, is always laid down under any lamp that burns kerosene, and if a blotter is always used where writing or painting is going on, a plain cloth ought to last for years. Light should abound where the family sit together, sunlight by day and good gas or lamp light by night should be generously supplied. A good duplex burner or a double student lamp uses no more oil than several small lamps

dotted down here and there, about the room, and it brings the family together about the central table. So with the drop light, which is an essential where gas is used. The wise woman discards gas in her sitting room, however, and uses good oil, which is far better for the eyes. There should be a writing desk in the room. The old-fashioned secretary was a valuable piece of sitting room furniture, and many a good one has been recalled from the attic within the last few years, and, by a judicious use of soda water, has been freed from old paint, and when scrubbed and rubbed, it has shone as good as new, and much more useful than the modern Davenport. There should be large, easy chairs, not too low, for the use of the men of the house, and for elderly people who find it hard to rise gracefully and with ease from soft, low chairs. There should also be low chairs with broad seats, and short arms, or none at all, for those who must busy themselves with sewing, knitting, and embroidery, and comfortable camp chairs that can be lightly lifted by the children and carried here and there about the room. Let the chairs, in fact let everything be strong and comfortable in this room. A heavy man is often put to great inconvenience because the chairs at his disposal are too flimsy to bear his weight. There are countless stories told of the Rev. Phillips Brooks, and men of his build, who dare not laugh at a dinner party lest their chairs resolve themselves into kindling wood at the first mirthful shake. In my own parlor there is one chair deep, broad, and of marvelous strength, bought with an eye to the needs of a friendly neighbor of grand dimensions. "This is a chair that Mr. B. can't break," said the kindly donor who had witnessed the collapsing of ordinary parlor chairs under his ponderous weight. Remember that no chair should be expected to do service that has not connecting rungs between the legs.

There should be, also, a lounge or sofa in this room, with ample pillow, not a round horse-hair cylinder, but something useful, restful, and not too fine. Let the color be as perfect as may be, but if the material of which it is made be really too splendid for daily use, its glories should be veiled behind a strong, washable tidy. I have seen a gray linen square or towel, with drawn work at the ends, such as costs fifty cents, perhaps, at the linen shops, with a few long-stemmed poppies bending together in a row at one end, wrought in outline, with the familiar legend, "We are all nodding, nid, nid, nodding," running sleepily down the center. That had just sentiment enough, and art enough for its place and use. Tidies are mere clutter if not intended to be brushed against and used. Paintings on blue satin, decked out with lace, are out of taste in any room, however fine, and out of place on any chair. No chair should be too daintily dressed out to be sat upon; and no painting should so hang as to invite shoulders clad in black broadcloth to rub themselves against it. "Tidies" or "chair backs," if used at all, should be of a firm material, not easily crumpled, should be firmly attached, should give off little or no lint, and should be washed when they are soiled, or thrown away. They are better when off the white.

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This is the room in which all things should seem to grow into a likeness to the household, and to grow old with it. Here no changes should be made but for good cause, and always for the better, never by the wholesale. Nor should furniture be introduced that is so startlingly new and gay as to put the rest out of countenance and make it look shabby by comparison. There are plenty of good stuffs subdued enough in color to harmonize with any long used parlor, no matter how old the carpet nor how faded the chair seats. Whatever is good and old, though worn, let us respect, preserve, and repair.

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NATIONAL AID TO EDUCATION.

BY GENERAL JOHN A. LOGAN,
U. S. Senator from Illinois.

To bring to light and expose to public gaze our national defects or social deformities is an unpleasant and generally thankless task, but so long as we shirk it, just so long will they remain to our national detriment and disgrace. To be conscious of disease, to locate and properly diagnose it, is to be half-way on the road to good health.

It is not necessary in this age of enlightenment to dwell upon the manifest and manifold advantages to a people and to a nation, of education. They are palpable, and conceded by all men. Illiteracy, then, must as plainly be a disadvantage to a nation, a hindrance to the advancement and welfare of its people, and an evil which should be eradicated.

We Americans boast, and boast rightfully, of the high position in the scale of intelligence we occupy as a people; but pride in that fact should not blind our eyes to our existing imperfections. We are proud of the attainments of our men of letters; we rejoice in the achievements of our scientists and inventors; we glory in our rapid advance among the nations to wealth and power; and we fail to give serious heed to the hundreds of thousands of our people who are growing up every year in clouded ignorance, without even the rudiments of education.

If we examine with care our census returns and the reports of our Bureau of Education, we will be startled by some of the facts they reveal. To follow many of these revelations in detail might lead to an accusation of making invidious distinctions, but there are enough to which the attention of the country may be called without the shadow of justification for such a charge. Let us look at these.

Take the Bulletin of "Illiteracy in the United States," as returned at the tenth census, and its first line reveals the deplorable fact that of the 36,761,607 persons of ten years of age and upward, 4,923,451 (over one-seventh) are unable to read, and 6,239,958 (nearly one-sixth) are unable to write.

It appears, moreover, from other census tabulations presented* to the United States Senate that, of the 50,155,783 persons constituting our population in 1880, there were equally proportioned between the white and colored races, 4,204,363 of both sexes over twenty-one years of age unable to write, or about 2,000,000 "illiterates" out of the 10,000,000 persons at that time entitled to vote; or, in other words, one of every five voters in the United States unable to write his name. From other statistics of that census it appears also that 1,640,000 voters were unable to read. Thus we have the astounding assurance that while one in every five voters can not write the ballot that he wishes to deposit, one in every six voters can not even read the ballot that he places in the box!

It is this one illiterate voter in every five (or six) voters who holds the balance of power at our elections.

While a very large proportion of our population, and also of that portion of it which exercises the elective franchise, can both read and write, yet a great number of these are very little the more intelligent because their limited ability to do either or both is so imperfect and so rarely availed of. Alluding to these, a committee of the United States Senate (Report 101, Pt. 2, first session, Forty-eighth Congress), said: "Of those who can write, multitudes do not place a sentence on paper twice in a lifetime. Thousands never get an idea from the printed page." Yet these are the men who may at any time

subject the country to their control—men who hold the weighty balance of political power.

To the patriot, to the lover of republican institutions, to the advocate of unrestricted individual suffrage, this fact is appalling. But it is none the less a fact that should be known. Nor may the advocates of monarchical systems of government and of restricted suffrage take comfort from that fact. That the deciding ballot in our political contests may be an ignorant one does not prove the evil or folly of unrestricted suffrage. Not at all. Cancer in the breast does not prove the folly of life. Nor is a jammed finger necessarily fatal. These simply remind us that in the one case the knife, and in the other the lotion, should be quickly and efficiently used. So with the ignorant ballot. Its existence merely proves the absolute necessity of prompt and vigorous action to enlighten it—of educating him who casts it—of taking counsel from the past and present and providently guarding the future. It teaches us that while we are properly horrified at any desecration of the sacred right of suffrage—whether by bulldozing, ballot-box stuffing, false counting, or other methods of intimidation or of fraud—it is high time to arouse ourselves to a state of facts existing around us and under our very noses, constituting a sacrilege only differing from these others in degree; to realize, in time to remedy it, that at every election we witness, at almost every voting precinct in the land, a constant, never-failing, almost winked-at desecration by power-clad ignorance of that right; to realize the great dangers from this source that we have thus far happily escaped; to properly apprehend the possible perils thus stored up for us in the bosom of the future, and by timely, energetic and sufficient action to arrest them. Thus the very knowledge that one in every five of our voters exercises ignorantly this undue and prodigious power must nerve a free and enlightened people to make immediate and adequate provision both to aid and to make obligatory the elementary education of those who in due time will inherit from us the right of suffrage.

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The very existence of the Republic depends upon the proper use of the potential ballot. Education alone can teach that proper use. Hence it is that "education to all" is the chief corner stone of the Republic; and to make that secure, no effort however great, no expense however large, should be withheld.

Here then, with the fact staring us in the face, that the one potential vote of every five votes that decides all the great political questions of the day—questions involving the most complex and far-reaching principles of government—questions of finance, of diplomacy, of commerce, of trade, of the tariff, of the relations of capital and labor, and others whose solution perplexes the minds of our very ablest statesmen—is an utterly ignorant vote, can the American people hesitate to demand of Congress not only immediate but adequate remedial legisla-

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*By Senator Butler, of South Carolina.

tion in the shape of ample national aid to elementary education for all of school age, and obligatory attendance within reasonable limits?

But this is not the only fact bearing heavily upon the question of the necessity of national aid to our public school system. If we examine the details of these census tabulations we shall find that much the larger portion of this illiteracy is found in some thirteen or fourteen states. Taking these states and territories in which the proportion of "illiterates" (those unable to write) to the total state or territorial population of ten years of age and upward exceeds 25 per cent., we find that ratio to be: In Alabama, 50.9 per cent.; Arkansas, 38; Florida, 43.4; Georgia, 49.9; Kentucky, 29.9; Louisiana, 49.1; Mississippi, 49.5; New Mexico, 65; North Carolina, 48.3; South Carolina, 55.4; Tennessee, 38.7; Texas, 29.7; and Virginia, 40.6. Massing these twelve states and one territory together, we find they include a population of 10,079,130 of ten years of age and upward, of which number no less than 4,324,513, or over two fifths, are unable to write—forty-three out of every one hundred unable to sign their own names—while of the 26,682,477 persons of like age in the remaining states and territories, the number of such illiterates is but 1,915,445, or a little over seven in every one hundred.

We are all of course aware that this large proportion of illiteracy in the states named is largely owing to the presence of the colored population. Nevertheless the fact remains that these people, to whom all the rights of citizenship have been accorded, and who will hereafter form a very important and possibly predominating factor in the administration of the affairs of many of these states, as well as an important factor in national affairs, must remain for a long time in ignorance unless some other means of educating them be adopted than that which now obtains.

But let no one deceive himself with the idea that this undue and lamentable ratio of illiteracy in these particular states is due wholly to the presence of the colored population. Unfortunately illiteracy prevails to a very considerable and almost an alarming extent among their native white population also. Thus the census tabulations show that the proportion of "illiterates" (those unable to write), in the total native white population, ten years of age and upward, is: In Alabama, 25 per cent.; Arkansas, 25.5; Florida, 20.7; Georgia, 23.2; Kentucky, 22.8; Louisiana, 19.8; Mississippi, 16.6; New Mexico, 64.2; North Carolina, 31.7; South Carolina, 22.4; Tennessee, 27.8; Texas, 13.9; and Virginia, 18.5. Massing them we find that of the 6,010,714 native whites, ten years of age and upward, within the territorial limits mentioned, there are as many as 1,395,441—being 23.2 per cent., or nearly one in every four of the whites—unable to write. It is evident, therefore, that the surprising illiteracy in these states is not wholly attributable to the presence therein of the colored race.

It is somewhat humiliating to have to confess to the world by our own official figures that one out of every four of the native whites over ten years of age in twelve states and one territory of our Republic is unable to write his own name, especially when we compare it with the additional fact, derived from the same tabulation, that the illiteracy of the foreign born of these same localities does not rise in any instance above 10.9 per cent.

Turning to the other side of the picture we may find some grains of comparative consolation in observing the fact that of the remaining 19,775,075 native whites, ten years of age and upward, in the United States only 860,019—or 4.3 per cent., being one in twenty-three—are unable to write. This favorable condition of one part of the country, however, only serves to bring out in sharper contrast the sad condition of the other part, and should spur the philanthropist and statesman to renewed and more strenuous effort to obliterate, or at least ameliorate, this alarming sectional inequality in the degree of illiteracy.

Were it not for the hope of ultimately removing this inequality by attaining an educational homogeneity or equality on the higher level as between the sections, one might almost be tempted to wish for an educational equalization on the lower grade; for as long as that inequality continues to exist, so long must it prove a source of irritation and danger in a thousand forms.

As to the situation in the old slave states, where the colored population is proportionately large, it is not difficult to understand it. We can appreciate the dread on the part of the whites of an "uprising," as it is termed, of the colored people. But the words of Jefferson*—possibly prophetic unless averted by the exercise of wisdom and fairness—have in them a depth of meaning that none but those whites can fully realize when, speaking of the slaves, he says: "And can the liberties of a nation be thought secure when we have removed their only firm basis, a conviction in the minds of the people that these liberties are the gift of God? That they are not to be violated but with his wrath? Indeed I tremble for my country when I reflect that God is just; that his justice can not sleep forever; that considering numbers, nature and natural means only, a revolution of the wheel of fortune, an exchange of situation is among the possible events; that it may become probable by supernatural interference! The Almighty has no attribute which can take sides with us in such a contest."

Aside from the overwringing influence of a large standing army there is but one thing that can prevent a race-conflict, the very possibility of which we dread to contemplate, and that is the benign and liberalizing influence of education, resulting in a free and untrammelled exercise of the elective franchise. Give the former and you will unquestionably secure the latter.

That the local as well as sectional inequality in education can be overcome by no other means than by national aid, will be further demonstrated. Nor is it just that we should expect or ask it to be otherwise. No matter now what may have caused this inequality, the fact that it exists is that which now momentarily concerns us. We know it can not be removed by recurring to the cause; and it will become more and more evident as we examine the subject that only by speedy and efficient congressional action can we now insure that future educational equilibrium, not only between the races and between the sections, but also between the people in each state, which will have so important a bearing upon the destinies of this nation, and is so essential to the continued peace, prosperity and contentment of its people.

Another fact of great importance, as bearing upon the necessity for national aid to education, is revealed by the census returns. It is a curious as well as an important revelation, because it shows that the ratio of children or persons under twenty-one years of age to the adults, is considerably larger in some states than in others, and correspondingly increases the educational burden.

The principle involved in this condition of affairs may be simply illustrated thus: Suppose the head of each family had to pay directly for the education of his own children. Then, even with an equality of means, the burden would, as a matter of course, fall heavier on the one with a numerous than the one with a small progeny.

To make apparent the effect of this inequality in the proportion of minors to adults in different parts of our common country, let us suppose that the mean average cost of schooling is four dollars-per annum for each child.

It appears that in Connecticut, out of every one hundred persons, fifty-nine are adults, and forty-one are minors. At this supposed rate, then, the fifty-nine adults would have each to pay two dollars and seventy-eight cents per annum in order to make up the one hundred and sixty-four dollars per annum needed for the education of the forty-one children. It appears also

*"Notes on Virginia, Fourth American Edition, N. Y. 1801," p. 241.

that in South Carolina, out of every one hundred persons, forty-three are adults and fifty-seven are minors. At the supposed rate, then, these forty-three adults would have each to pay five dollars and thirty cents per annum in order to make up the two hundred and twenty-eight dollars per annum needed for the education of the fifty-seven children.

Now, this is a very important fact, indeed, and must lead all fair minded advocates of education to modify somewhat the criticisms they may have made touching the expenditure in the South for education as compared with that in the North and West; for here it becomes palpable that two dollars and seventy-eight cents per adult in Connecticut is equivalent to five dollars and thirty cents per adult in South Carolina for the schooling of the children respectively, in those states. Nearly twice as much in one state as in the other.

But this result is from an assumed uniform mean average standard of the cost of educating each child in the Union. Let us test the matter by a comparison founded on actual cost. Take, for instance, the states of Maine and Mississippi.

In Maine there are fifty-eight adults to forty-two minors in every one hundred persons. In Mississippi there are forty-three adults to fifty-seven minors in every one hundred persons. In Maine* the educational expenditure per capita of the school population is four dollars and sixty-seven cents per annum. This enforces an annual expenditure for this purpose of three dollars and thirty-eight cents by each adult. An equal school tax of four dollars and sixty-seven cents per annum for each scholar, imposed upon the adult population of Mississippi would call for six dollars and nineteen cents from each adult—or nearly twice what the adult of Maine must pay.

The effects of this disparity will be more fully dwelt upon at a later period. But it must surely be already apparent that this inequality of the educational burden created by the disparity existing between the populations of various portions of our country can alone be met and remedied by some aid from the general government.

It is true that the facts thus far adduced indicate rather the necessity for national assistance to certain sections or states than for general and uniform aid to all. But a further study and the development of other facts will, as we proceed, more fully reveal, not alone the wisdom and necessity of such aid to all, but the character and extent of the aid required.

Before we reach that period, however, there are facts touching other phases of inequality of burden that are worthy of close and careful consideration.

Careful tabulations from the census returns show that a school enrollment of 22.4 per cent. of the total population of Missouri amounts to but 88.6 per cent. of the school population of that state, fixing the standard of school age as between six and sixteen years; while a school enrollment of 22 per cent. of the total population of New Jersey is equal to 101.5 per cent. of her school population. Hence, although Missouri has a somewhat larger percentage in school of her total population than has New Jersey, yet she lacks more than 11 per cent. of having all her children of school age enrolled as scholars; while a slightly smaller per cent. of her total population places more than all the school age children of New Jersey in school. So also with Vermont, where a school enrollment of 22 per cent. of the total population gives 109.5 per cent. in school, of all of school age.

Comparing Nebraska and Connecticut, we find that while 22.3 per cent. of the total population of the former state enrolled in the schools amounts to but 95.4 per cent. of her children of school age, 21.3 per cent. of the total population of the latter state enrolled in the schools is equivalent to 110.3 of her children of school age.

Massachusetts has to send 19.2 per cent. of her total population to school in order to equal 104.8 per cent. of her children of school age, while Illinois has to send to school 24.5 per cent. of her population to reach a like ratio of enrolled scholars to children of school age.

Even in states situated so near to each other as Pennsylvania and New York we observe this inequality. In the former, where the school enrollment is 22.8 per cent. of the total population, it is but 99.4 per cent. of the children of school age, while in New York 23 per cent. of the total population enrolled in the schools is 112.4 per cent. of her children of school age.

Thus far have been selected for comparison some of those states the ratios of whose school enrollment to the total population were about the same. But while these contrasts bring out very clearly the inequality in the burden of educating the children of our country, yet there are more marked illustrations at hand.

Take Arkansas, West Virginia and New York, for instance. In Arkansas the school enrollment is 13.5 per cent. of population, and but 51.3 per cent. of the children of school age. At the same ratio a school enrollment of 23 per cent. of total population in Arkansas would be but 87.4 per cent. of the children of school age. West Virginia has a school enrollment of 23.3 per cent. of total population, which is only 87.9 per cent. of her children of school age. Yet New York, as we have already seen, by an enrollment of 23 per cent. of her total population secures schooling for 113.3 per cent.—more than all—of her children of school age.

Comparing other states, one with the other—such as Alabama with Maine, Georgia with New Hampshire, Tennessee with Rhode Island, Mississippi with Massachusetts, etc.—we see similar, and in some cases even greater inequality.

Let us now apply these facts practically, and thus reach a clearer understanding of the effect of this great disparity.

The actual mean average cost of the schooling of each public school scholar in the United States is about ten dollars. Assuming then that the adult population of each state bears the burden of educating its children, and that all the children of school age in each state are enrolled in the schools—as they should be—let us ascertain how much the tax per capita would be on the adults bearing this burden in each state and territory. In other words, let us discover how much in each state and territory must every adult (male or female) pay every year in order to supply the ten dollars per annum that it costs to educate each and every child in that state or territory.

It would cost each adult in Montana, \$1.95; in Wyoming, \$2.12; Nevada, \$2.12; Colorado, \$2.20; Arizona, \$2.34; New Hampshire, \$2.78; Idaho, \$3.00; Massachusetts, \$3.23; Dakota, \$3.30; Rhode Island, \$3.22; California, \$3.33; Connecticut, \$3.27; Maine, \$3.43; Vermont, \$3.46; New York, \$3.56; District of Columbia, \$3.77; Washington, \$3.94; New Jersey, \$4.02; Michigan, \$4.15; Oregon, \$4.29; Delaware, \$4.31; Pennsylvania, \$4.26; Ohio, \$4.55; Maryland, \$4.55; Nebraska, \$4.77; Minnesota, \$4.70; New Mexico, \$4.65; Wisconsin, \$4.86; Illinois, \$4.88; Indiana, \$5.00; Iowa, \$5.10; Missouri, \$5.28; Kansas, \$5.32; Louisiana, \$5.54; North Carolina, \$5.67; Virginia, \$5.59; Texas, \$5.86; Kentucky, \$5.65; Florida, \$5.78; Utah, \$6.07; Alabama, \$6.12; Arkansas, \$6.12; Georgia, \$5.98; South Carolina, \$5.98; Tennessee, \$6.00; West Virginia, \$5.86, and Mississippi, \$6.28—while, massing the entire Union, the cost to each adult in it would be \$4.70.

Thus we find that while the school tax on each adult in New York would be but \$3.56, in the adjoining state of Pennsylvania it would be \$4.26; that while in Massachusetts it would be but \$3.23, in Illinois it would be \$4.88—a difference of \$1.65 per capita to the adult; that while in New Hampshire it would be but \$2.78, in Mississippi it would be more than double that amount. But the reader can himself, by a glance at the list presented, perceive even more glaring inequalities than these in the relative burdens which would be imposed upon the adult

* See Report of Commissioner of Education for 1881, page 49.

† The surplus of percentage being due doubtless to the attendance at school of some children beyond the school age prescribed by law.

population of the various states and territories, were that burden to be placed entirely on their shoulders.

If it be the true policy of a nation to equalize, as far as possible, the necessary burdens imposed upon its people, then we certainly have before us in these statistics, a condition of facts demanding serious consideration and efficacious action by the general government.

If inequality in the burdens imposed in order to educate our children be any argument in favor of national aid to education—and who will venture to deny it?—then we have in these statistics positive evidence of very great and possibly hitherto unsuspected inequalities; inequalities of which none could be aware without a close and critical analysis of the figures, the developments of which as previously hinted, may well cause us to modify somewhat the reproaches we may have felt inclined to cast upon some of our states for what seemed to be a lack of proper effort on their part in the direction of education.

While, however, reproachful criticism of them still appears to some extent justifiable, yet the deductions from rearrangement and classification of the census and educational bureau tables show that the fault does not altogether lie at the doors of those among whom the greatest amount of illiteracy is found.

In order to make this clear let us examine the ratio of children enrolled in schools, not to the state, but to the adult population. That ratio is, in Alabama, 34.6 per cent.; Arkansas, 31.4; California, 35.2; Colorado, 17.7; Connecticut, 36.1; Delaware, 34.6; District of Columbia, 32.1; Florida, 35.8; Georgia, 42; Illinois, 50; Indiana, 54.3; Iowa, 56; Kansas, 53.8; Kentucky, 36.3; Louisiana, 19.8; Maine, 40; Maryland, 31.4; Massachusetts, 33.5; Michigan, 44; Minnesota, 47.8; Mississippi, 48.6; Missouri, 47.7; Nebraska, 45.5; New Hampshire,

31.3; New Jersey, 40.7; New York, 40.3; North Carolina, 40.7; Ohio, 47.8; Pennsylvania, 42.2; Rhode Island, 30.2; South Carolina, 32.3; Tennessee, 49.1; Texas, 25.2; Utah, 44.4; Vermont, 38; Virginia, 35.4; West Virginia, 51.8; Wisconsin, 50.4, and in the entire Union, 42 per cent.

Now, the mean average number of children in the United States enrolled in the schools being forty-two to every one hundred adults, what is our surprise to find, in the figures just given, that every New England state, as well as New York, New Jersey, and the District of Columbia, falls below this average, while on the other hand, every northwestern state (including Ohio, Missouri and Kansas), as well as Mississippi, Tennessee and West Virginia, stands above it!

That in proportion to the adult population of those states, there are more children at school in Mississippi, Tennessee and West Virginia, than in any of the New England states, is, indeed, an astounding revelation.

Supposing, then, the cost of educating a child in those states to be the same, it follows that each one hundred adults in Mississippi, Tennessee, and West Virginia are paying more to educate their children than is paid by the same number of adults in any New England state!

At first sight these statistical results fairly stagger one, and give rise to doubts of their accuracy. But a careful examination of them will satisfy any reasonable mind that these developments are veritable facts, if the census returns and the school enrollment reported by the Commissioners of Education are to be accepted—being based upon and directly calculated from them. Even supposing the existence of some deficiencies in the returns or some minor errors in the calculations, the general facts they reveal must be accepted as true.

[TO BE CONTINUED.]

THE PARSON'S COMFORTER.

BY FREDERICK LANGBRIDGE.

The parson goes about his daily ways

With all the parish troubles in his head,
And takes his Bible out, and reads and prays,
Beside the sufferer's chair, the dying bed.

Whate'er the secret skeleton may be—
Doubt, drink, or debt—that keeps within his lair,
When parson comes, the owner turns the key,
And let's him out to "squeak and gibber" there.

It seems a possibility unguessed—
Or little borne in mind, if haply known—
The he who cheers in trouble all the rest
May now and then have troubles of his own.

Alas! God knows, he has his foe to fight,
His closet-atomy, severe and grim;
All others claim his comfort as of right,
But, hapless parson! who shall comfort *him*?

A friend he has to whom he may repair
(Beside that One who carries all our grief),
And when his load is more than he can bear
He seeks his comforter, and finds relief.

He finds a cottage, very poor and small,
The meanest tenement where all are mean;
Yet decency and order mark it all:—
The panes are bright, the step severely clean.

He lifts the latch—his comforter is there,
Propt in the bed, where now for weeks she stays,
Or, haply, seated knitting in her chair,
If this be one of those rare "better days."

A tiny woman, stunted, bent, and thin;
Her features sharp with pain that always wakes;
The nimble hand she holds the needles in
Is warped and wrenched by dire rheumatic aches.

Sometimes, but seldom, neighbors hear her moan,
Wrung by some sudden stress of fiercer pain;
Often they hear her pray, but none has known,
No single soul has heard her lips complain.

The parson enters, and a gracious smile
Over the poor pinched features brightly grows;
She lets the needles rest a little while;
"You're kindly welcome sir!"—ah! that he knows.

He takes the Book, and opens at the place—
No need to ask her which her favorite psalm;
And, as he reads, upon her tortured face
There comes a holy rapture, deep and calm.

She murmurs softly with him as he reads
(She can repeat the Psalter through at will);
"He feeds me in green pastures, and He leads,
He leads me forth beside the waters still."

The reading's done, and now the prayer is said;
He bids farewell, and leaves her to her pain;
But grace and blessing on his soul are shed—
He goes forth comforted and strong again.

He takes his way, on divers errands bound,
Ablar to plead, and warn, and comfort woes;
That is the darkest house on all his round,
And yet, be sure, the happiest house he knows.

THE SMITHSONIAN INSTITUTION.

BY G. BROWN GOODE.

"Let the trust of JAMES SMITHSON to the United States of America be faithfully executed by their representatives in Congress, let the result accomplish his object, 'the increase and diffusion of knowledge among men,' and a wreath of more unfading verdure shall entwine itself in the lapse of future ages around the name of Smithson, than the united hands of tradition, history, and poetry have braided around the name of Percy through the long perspective in ages past of a thousand years."—*John Quincy Adams.*

The name of the Smithsonian Institution is a household word throughout North America, and its fame is current wherever printed literature exists. Abroad it is regarded as the chief exponent of the scientific activities of the people of the United States, and the administrative scientific department of our government. At home, its actual relations to the administration are better understood, and it is looked upon in its proper capacity—that of an organization closely affiliated to the government and tenderly cherished by its officers, yet, in virtue of its independent foundation, independent of political favor, and ready to encourage, advise and coöperate with any public or private enterprise without the necessity of annual appeals to the congressional committees on appropriations.

Visitors to the national capital usually carry away pleasant memories of the quiet old building among the trees in the mall, with its mediæval battlements and turrets of brown stone conspicuous from every point of view, and the multitude who enter its halls are at least impressed with the fact that the national treasure houses are becoming filled with valuable collections rather faster than the available money and space will allow to be properly arranged and displayed. Only a very few, however, of the four hundred thousand persons who visited the buildings last year can have had the opportunity to inspect the administrative offices or the scientific laboratories, and very few indeed of those who are acquainted with the general nature of the operations of the establishment, have the slightest conception of their meaning and importance.

No class of American people, except indeed our scientific investigators, better understand and appreciate the work of the Institution than do our members of Congress, as is clearly shown by the uniform liberality with which, throughout many successive terms, regardless of changes in the political complexion of the administration, they have supported its policy, by the care with which they disseminate its reports, by the judgment with which they select their representatives in its board of regents, and above all, by the scrupulous care with which they have protected its independence from political complications. Through the disinterested labors of Washington correspondents, novelists, and playwrights, the average congressman of current, popular belief, is not a person remarkable either for manners, honesty or intellect. Residents of Washington, however, do not find the representative men at the Capital counterparts of the eminent politicians depicted by the author of "Democracy," but in their stead, practical men of business, hard-working in their committees and hard-worked by their constituents. It is its support by these men, and through them by the people of the United States, that has enabled the Smithsonian Institution to do its work in the past. It is to such support that it will owe its efficiency in the future, and it seems right that every opportunity should be taken to explain its operations to the public. Representatives of the best classes of thinking Americans will no doubt thoroughly appreciate the benefits which education has received and will continue to receive from the proper administration of the Smithsonian bequest.

The story of the foundation of the Institution sounds more like a romance than like fact. Its history seems like the fulfillment of some ancient prophecy—even more strikingly so because it is evident that the future is to fulfill the promise of the past. The father of the founder of the Smithsonian Institution was one of the most distinguished members of the English peerage. Upon the plate of his coffin in Westminster Abbey, where he was buried "in great pomp" in 1786, he is described as "the most high, puissant and most noble prince Hugh Percy, Duke and Earl of Northumberland, Earl Percy, Baron Warkworth and Lovaine, Lord Lieutenant and Custos Rotulorum of the Counties of Middlesex and Northumberland, Vice Admiral of the County of Northumberland and of all America, one of the Lords of His Majesty's most Honorable Privy Council and Knight of the most noble Order of the Garter, etc., etc." While his aged father was sustaining this overwhelming accumulation of dignities, and while his elder brother, Earl Percy, was acting as Lieutenant-General in the war against the rebellious British colonies in North America (he commanded the reinforcements at the battle of Lexington in 1775, and led the column that reduced Fort Washington, near New York in 1776), James Smithson, a youth of modest fortune, inherited from his mother, was laying the foundations of a scientific education in the English schools and colleges, receiving the degree of Master of Arts at Pembroke College, Oxford, in 1786, the year of his father's death. He was then known as James Louis Macie, Esq., and did not assume the name of Smithson until fourteen years later, after he had attained to some reputation as a man of science. His mother was not the Duchess of Northumberland, but a cousin of her father's, Elizabeth Hungerford, who was subsequently known as Mrs. Macie. She appears to have been the daughter and heiress of Sir George Hungerford of Audley and the Hon. Frances Seymour, sister of the Duke of Somerset and aunt of Algernon Seymour, Lord Percy, by marriage with whose daughter Sir Hugh Smithson was enabled to assume the name of Percy and the title of Duke of Northumberland. The Smithsons were an old Yorkshire family, Sir Hugh Smithson, the great-grandfather of James Smithson, having been created baronet in 1660 by Charles II. after his restoration. The names of Percy and Northumberland were, as has been stated, assumed by James Smithson's father. These barren, genealogical details are referred to because they seem to be necessary to the understanding of James Smithson's career.

Proud of his descent he undoubtedly was. In his will he describes his identity himself in these words: "I, James Smithson, son of Hugh, first Duke of Northumberland and Elizabeth, heiress of the Hungerfords of Audley, and niece to Charles the Proud, Duke of Somerset." He was, however, a man of broad, philosophic mind, in whom a thorough training in the best scientific methods of his day, and associations with leading investigators in Germany and France, and his brother Fellows of the Royal Society of London, had developed a generous appreciation of the value of scholarship and scientific culture.

In one of his manuscripts was found the following sentiment, which I have already referred to as prophetic in its ring: "The best blood of England flows in my veins; on my father's side I am a Northumberland, on my mother's I am related to kings, but this avails me not. *My name shall live in the memory of man when the titles of the Northumberlands and the Percys are extinct and forgotten.*"

These words came to my mind last summer in London when I saw the present Duke of Northumberland, grandson of Smithson's half-brother, a feeble old man, still one of England's greatest dignitaries, following in the train of the Prince of Wales, and rising to falter out a feeble speech proposing a vote of thanks to His Royal Highness for presiding at one of the conferences of the International Fisheries' Exhibition, upon the occasion of an address by Prof. Huxley, president of the Royal Society. The name of the Smithsonian Institution has a world-wide fame; but who outside of English court circles ever heard of Algernon George Percy, Duke of Northumberland?

Smithson seems early in life to have become imbued with the scientific spirit of his time. In 1784, while still an undergraduate at Oxford, he made a scientific exploration of the coasts of Scotland in company with a party of geologists. In 1787 he was admitted as a Fellow of the Royal Society, and during the remaining forty-two years of his life, a considerable portion of which was passed upon the continent, in Berlin, Paris, Rome, Florence and Geneva, he was the associate of the leading men of science, and devoted himself to research. He made an extensive collection of minerals, which was destroyed by the burning of a portion of the Smithsonian building in 1865, and always carried with him a portable chemical laboratory. His contributions to science are included in twenty-seven memoirs, chiefly upon topics in mineralogy and organic chemistry, but a number of them relating to applied science and the industrial arts.

His work was by no means of an epoch-making character, but seems to have been remarkable for its minute accuracy. Smithson was a much greater man than his published writings would indicate. In his eulogy the president of the Royal Society remarked: "He carried with him the esteem of various private friends, and of a still larger number of persons who admired and appreciated his acquirements." He was evidently a man of broad, general culture, who understood thoroughly the needs of the world in the direction of scientific endowment, and whose action in bequeathing his estate to the people of America was deliberate and well considered.

In his admirable little monograph entitled "Smithson and His Bequest," Mr. W. J. Rhees has shown the tendency of the time of Smithson to have been in the direction of establishing permanent scientific institutions. Between 1782 and 1826, over twenty of the most important academies and societies now in existence were organized. This period he remarks "was not less marked by the gloom occasioned by long protracted and almost universal war, and the extent and rapidity of its social changes, than by the luster of its brilliant discoveries in science, and its useful inventions in the arts. Pure, abstract science had many illustrious votaries, and the practical applications of its truths gave to the world many of the great inventions by means of which civilization has made such immense and rapid progress." He quotes in support of these statements the words of Lord Brougham, the representative statesman of the day. "To instruct the people in the rudiments of philosophy," Brougham remarked, "would of itself be an object sufficiently brilliant to allure the noblest ambition."

He recommended this idea to the wealthy men of England, pointing out how, by the promotion of such ends, a man, however averse to the turmoil of public affairs, may enjoy the noblest gratification of which the most aspiring nature is susceptible, and may influence by his single exertions the character and fortunes of a whole generation.

Very closely do these ideas agree with those expressed by Smithson in various passages in his note books, especially with that which is used for a motto upon the publications of the Institution: "Every man is a valuable member of society who, by his observations, researches, and experiments, procures knowledge for men." Or this: "It is in his knowledge

that man has found his greatness and his happiness, the high superiority which he holds over the other animals who inherit the earth with him, and consequently, no ignorance is probably without loss to him, no error without evil."

It was with a mind full of such thoughts as these, with perhaps the support and inspiration of Lord Brougham's words quoted above from his "Treatise on Popular Education," printed in 1825, with such models in mind as the Royal Society, whose object is "the improvement of natural knowledge," the Royal Institution "for diffusing the knowledge and facilitating the general introduction of useful mechanical inventions and improvements, and for teaching the application of science to the common purposes of life," and the Society for the Diffusion of Useful Knowledge established in London in 1825, that in 1826 Smithson drew up his will containing the following weighty provision: "*I bequeath the whole of my property to the United States of America to found at Washington, under the name of the Smithsonian Institution, an establishment for the increase and diffusion of knowledge among men.*"

No one has been able to show why he selected the United States as the seat of his foundation. He had no acquaintances in America, nor does he appear to have had any books relating to America save two. Rhees quotes from one of these, "Travels Through North America," by Isaac Weld, secretary of the Royal Society, a paragraph concerning Washington, then a small town of 5,000 inhabitants, in which it is predicted that "the Federal city, as soon as navigation is perfected, will increase most rapidly, and that at a future day, if the affairs of the United States go on as rapidly as they have done, it will become the grand emporium of the West, and rival in magnitude and splendor the cities of the whole world."

Inspired by a belief in the future greatness of the new nation, realizing that while the needs of England were well met by existing organizations such as would not be likely to spring up for many years in a new, poor, and growing country, he founded in the new England an institution of learning, the civilizing power of which has been of incalculable value. Who can attempt to say what the condition of the United States would have been to-day without this bequest? In the words of John Quincy Adams: "Of all the foundations of establishments for pious or charitable uses which ever signalized the spirit of the age or the comprehensive beneficence of the founder, none can be named more deserving the approbation of mankind."

When the fact of the bequest became known, some six years after Smithson's death, much opposition was shown in Congress toward its acceptance. Eminent statesmen like Calhoun and Preston argued that it was beneath the dignity of the United States to receive presents, and that it was too cheap a way of conferring immortality on the donor. The wise counsels and enthusiastic labors of John Quincy Adams, who seems to have had from the first a thorough appreciation of the importance of the matter, finally prevailed, and the Hon. Richard Rush was sent to England to prosecute the claim. He entered suit in the Courts of Chancery, in the name of the President of the United States, and in less than two years—an event unparalleled in the Court of Chancery—had obtained a favorable decision. The legacy was brought over in the form of 104,960 gold sovereigns which were delivered September 1st, 1838, to the Philadelphia mint, where they were immediately recoined into American money, producing \$508,318.46, as the first installment of the Smithsonian legacy. This was increased in 1861 to \$534,529.09.

For eight years the legacy lay in the Treasury, while the wise men of the nation tried to decide what to do with it. In this instance the adage that in the multitude of counselors there is wisdom did not appear to be applicable in the ordinary interpretation. The delay, though irksome to those who desired to see immediate results, was, however, the best thing in the

end for the interests of the trust. Every imaginable disposition of the legacy was proposed and discussed in Congress; the debates fill nearly three hundred and fifty pages of Rhees's compilation of Smithsonian documents. Letters by the hundred, advisory, expostulatory and dissuasive were received from representative thinkers and from societies at home and abroad. Every man had a scheme peculiar to himself, and opposed all other schemes with a vigor proportionate to their dissimilarity to his own. Schools of every grade, from a national university to an agricultural school, a normal school and a school for the blind were proposed. A library, a botanical garden, an observatory, a chemical laboratory, a popular publishing house, a lecture lyceum, an art museum, any and all of these and many more were proposed and advocated by this voluntary congress of many men of many minds. It is not necessary in this place to discuss the history of the period at length, nor to relate the manner in which the prevalence of wiser councils was brought about. It is sufficient to say that though the new institution was burdened from the start with various undertakings which have since proved unprofitable or better suited to the capacity of other institutions, such have been the flexibility of its organization and the vitality of its membership that it has been able to work out a career for itself unparalleled in the history of benevolent foundations.

It need not be said that the accomplishment of these effects was the result of long continued effort on the part of men of unusual ability, energy and personal influence. No board of trustees or regents, no succession of officers serving out their terms in rotation could have developed from a chaos of conflicting opinions, a strongly individualized establishment like the Smithsonian Institution. The names of Joseph Henry and Spencer F. Baird are so thoroughly identified with that of the Institution that their biographies combined would form an almost complete history of its operations. A thirty-two years' term of uninterrupted administrative service has been rendered by one, thirty-four years by the other. It is very doubtful whether any other institution has ever had the benefit of such an uninterrupted administration of thirty-eight years, beginning with its birth and continuing in an unbroken line of consistent policy a career of increasing usefulness and enterprise.

Joseph Henry, the first secretary, entered upon his duties at the end of the year 1846, a man already famous as an investigator in physical science, a professor of fourteen years' standing in Princeton College, and recognized as eminent in scientific and general acquirements. From the age of forty-seven to that of seventy-nine, his life was merged in that of the Institution. Professor Asa Gray has pointed out so clearly the deep impression which he made upon the Institution while it was yet plastic, that I venture to quote his words in order to explain the character of this new force in the evolution of good results from the Smithsonian benefaction. "Some time before his appointment," writes Professor Gray, "he had been requested by members of the Board of Regents to examine the will of Smithson and to suggest a plan of organization by which the object of the bequest might, in his opinion, best be realized. He did so, and the plan he drew was in their hands when he was chosen secretary. The plan was based on the conviction 'that the intention of the donor was to advance science by original research and publication; that the establishment was for the benefit of mankind generally, and that all unnecessary expenditures on local objects would be violations of the trust.' His 'Programme of Organization' was submitted to the Board of Regents in the following year, was adopted as its governing policy, and has been reprinted in full or in part in almost every annual report. If the Institution is now known and praised throughout the world of science and letters, if it is fulfilling the will of its founder and the reasonable expectations of the nation which accepted and established the trust, the credit is mainly due to the practical wisdom, the catholic spirit, and the indomitable perseverance of its first

secretary, to whom the establishing act gave much power of shaping ends, which as rough-hewn by Congress were susceptible of various diversion. Henry took his stand on the broad and ample terms of the bequest, 'for the increase and diffusion of useful knowledge among men,' and he never narrowed his mind and to *locality* gave what was meant for mankind. He proposed only one restriction, of wisdom and necessity, that in view of the limited means of the Institution, it ought not to undertake anything which could be done, and well done, by other existing instrumentalities. So as occasion arose he lightened its load and saved its energies by giving over to other agencies some of its cherished work." The character of the work done in manifold directions will be discussed topically below; its spirit is sufficiently indicated in Dr. Gray's terse summary just quoted. Professor Henry died in 1878. "Remembering his great career as a man of science," remarked President Garfield, "as a man who served his Government with singular ability and faithfulness, who was loved and venerated by every circle who was blessed with the light of his friendship, the worthiest and the best, whose life added new luster to the glory of the human race, we shall be most fortunate if ever in the future we see his like again."* His statue, erected by Congress, stands in the Smithsonian Park.

Concerning the influence of Professor Baird, upon whom the mantle of his predecessor has descended, it would perhaps be premature and out of taste to speak. His eminence as a naturalist and his patriotic service as Commissioner of Fisheries are too well known to need mention, and indeed may be quite as appropriately discussed elsewhere. As assistant secretary from the age of twenty-four he was intimately associated with Professor Henry for twenty-seven years, and his executive ability found full scope in the development of the systems of publication and international exchange, as well as the museum, and the explorations, biological and ethnological, which were from the beginning under his charge. As secretary his policy has been a direct continuation of that of Professor Henry. The services of Mr. William J. Rhees, for thirty-two years chief clerk, merit also especial notice.

The formal direction of the Institution is vested in a board of regents, consisting of the Vice President and Chief Justice of the United States, three members each from the Senate and the House of Representatives, and six persons citizens of the United States appointed by Congress. The President and his cabinet are *ex officio* members of the Institution, and there is a provision, not at present carried into effect, providing for the election of honorary members of the Institution. The secretary is the only executive officer of the board, and is responsible to the board for his conduct of affairs. The regents meet once a year in January. Many eminent men have served in the capacity of regents, and the records of their proceedings indicate that their interest in the work under their charge has been uniformly very active.

The building occupied by the Institution and bearing its name is an ornate structure of Seneca brown stone, occupying a prominent position in the "Mall" which extends from the Capitol to the Washington monument. This building was begun in 1847 and completed in 1855. It is hybrid in character, combining features selected from both Gothic and Romanesque style, and is more admired by the public than by connoisseurs in architecture. It is doubtful if a building more unsuited to the purposes for which it was designed was ever constructed. The diversion of the funds of the Smithsonian

* "One trait," remarks Professor Gray, "may not be wholly omitted from the biography of one who has well been called 'the model of a Christian gentleman,' and who is also our best example of a physical philosopher. His life was the practical harmony of the two characters. His entire freedom from the doubts which disturb some minds is shown in that last letter which he dictated, in which he touches the grounds of faith, both in natural and revealed religion; also in his sententious declaration upon some earlier occasions, that the person who thought there could be any real conflict between science and religion must be either very young in science or very ignorant of religion."

bequest to this building was one of Professor Henry's greatest griefs, and before the close of his life by careful economy of the annual income, he had succeeded in restoring the entire sum, amounting to about \$450,000 to the permanent endowment fund, beside increasing this fund nearly \$150,000 over and above the original bequest. The eastern wing of the building, for so many years the hospitable home of the secretaries, has been reconstructed internally, and the officers of the Institution are all established within its walls. The remainder of the building is occupied by laboratories and exhibition halls connected with the National Museum. Another building has recently been built east of the Smithsonian for the reception of a portion of the national collections. This was put up by congressional appropriation, and Congress has at least recognized the justice of the claim, so many years urged upon them by the secretaries, that the Smithsonian money should not be used to provide shelter for the government cabinets, and has assumed the care of the Smithsonian building and votes money for its repairs and maintenance.

Few people who visit Washington make the proper discrimination between the Smithsonian Institution proper, and the establishments under its custody. What they see is the National Museum. The relations of the Museum to the Institution will be discussed more fully in a separate article, but it is necessary to state just here that it is not the property of the Institution, but rather its ward—its management being intrusted by law to the Institution which is provided with funds for its maintenance by annual congressional grants. In early days the Smithsonian supported collections of its own, but these were not primarily for public exhibition, but for the uses of scientific investigators. Professor Henry always maintained that not one cent of the Smithsonian fund could with propriety be applied to the support of the National Museum, and his view is now the accepted one.

In the Smithsonian proper, little is to be seen by visitors. In the regents' room is an interesting collection of relics of the founder, including his portrait, his scientific library, and certain of his pictures and personal effects. Beside the regents' room there are offices, store rooms and packing rooms occupied by busy clerks and mechanics. The Smithsonian is, first of all, an executive establishment, to which have been confided various trusts, to be mentioned hereafter. It is also a publishing house, and an "exchange" for the reception and transmission of scientific materials. The great masses of books in brown wrappers and cases of papers, apparatus and specimens constitute therefore the greater bulk of the material with which it has to deal.

The leading feature of the plan proposed by Professor Henry was from the first "to assist men of science in making original researches, to publish them in a series of volumes, and to give a copy of them to every first-class library on the face of the earth." The manner in which the first item of policy has been carried out can not be described here. Those who wish to know how it has been done must consult the thirty-four thick volumes of the annual reports, presented to and printed by Congress. It is safe to say, however, in general terms that there is probably not a scientific investigator in America to whom the helping hand of the Institution has not at some time been of service, and that assistance of this sort has been by no means restricted to this side of the Atlantic. Books, apparatus and laboratory accommodations have been supplied in thousands of instances, and every year a certain number of money grants have been made. Not less important has been the personal encouragement afforded, especially to beginners and persons remote from other advice, in the hundreds of thousands of letters which have been written by the two secretaries during the seventy years of their added terms of office. No communication is ever passed by unnoticed and the archive rooms of the Institution packed from floor to ceiling with letter files and letter copy books are well worthy of inspection.

The publications of the establishment are as numerous as those of a great publishing house, and as a matter of fact, they are all given away; although there is a provision for their sale at cost price, I doubt if a hundred dollars' worth has been sold in ten years. There are three series, the aspect of which must be familiar to every observing person who has ever spent a day among the shelves in any American library of respectable standing. The Smithsonian "Contributions to Knowledge," now including twenty-three stately volumes quarto with 116 memoirs, in all 12,456 pages, and numerous fine plates, the Smithsonian miscellaneous collection, in octavo, containing 122 papers with 20,299 pages, and thirty-five annual reports. The papers included in these volumes are all published separately, the number of separate volumes printed up to this time being above 500. These include papers varying in length from 4 to 1,000 pages, by the most eminent specialists in every branch of science. The most recent work, one now in progress, two volumes having been published, is a systematic work on the botany of North America by Dr. Asa Gray; another is an illustrated work on "Aboriginal Fishery," by Dr. Charles Rau.

I have never seen an estimate of the value of the books distributed during the thirty-eight years, but I should judge that it can not fall below \$1,000,000, estimating the prices at standing publishing rates.

In addition to the direct publications of the Institution let us look at the numerous magnificent volumes of scientific reports printed in more or less direct coöperation with the Institution by the various government surveys and exploring expeditions, at government expense. Who can doubt that the extent of this literature, which is a constant source of comment in foreign scientific journals, where it is desired to stimulate European governments to publish scientific researches in a similar way, is largely a product of the influence of the Institution?

One of the main features of the Institution in its early days was its library. Its publications were distributed throughout the world to every scientific and literary institution of good repute, and in exchange they sent their own publications. In this way an immense collection of scientific periodicals and journals was received, and the Smithsonian library became one of the most extensive in the world in this department. Books came in freely from other quarters and the support of the library became a great burden to the Smithsonian fund. The same policy which led to the abandonment of the Smithsonian cabinet, led to a transfer of the library, and in 1866 the books were transferred to the Capitol where they are cared for as a section of the national library under the name of "The Smithsonian Deposit." The books come in as heretofore, in exchange and as donations, and are sent weekly to their place of custody at the other end of the mall. The increase in 1883 amounted to 11,739 books and pamphlets, and the total deposit amounts to about 100,000 volumes. Several thousand volumes are retained in the working libraries of the Institution.

At the time of the Smithsonian bequest the endowment of research had scarcely been attempted in America. There were schools and colleges in which science was taught and certain of the professors employed in these institutions were engaged in original investigation. There were a few young and struggling scientific societies, the American Academy of Sciences in Boston, and the Boston Society of Natural History, the Connecticut Academy of Sciences, the New York Lyceum of Natural History (now the New York Academy of Sciences), the American Philosophical Society, and the Academy of Natural Sciences in Philadelphia. The American Association for the Advancement of Science was not organized until 1840. The publications of these societies were necessarily very limited in extent and influence, but then together with the monthly journal published at New Haven, by Professor Silliman, they embodied the chief outcome of American scientific work. Science in America was an infant in swaddling clothes. Forty

years have passed and American science now stands by the side of the science of Britain, of Germany, of France, a fellow worker, competing on an equal footing in nearly every field of research. No one is likely to question the statement that the Smithsonian Institution has done what was absolutely indispensable to the rapid and symmetrical development of American scientific institutions, and it is equally certain that the progress of American science has had an immense influence

upon the welfare of America in every department of intellectual and industrial activity. It has offered a helping hand to every institution and every individual in America capable of profiting by its generous aid, and has stimulated coöperation by them with similar workers abroad. In this way its influence has been enormous, but still greater has been the benefit of its stimulating powers upon the policy of the general government toward scientific ends.

GEOGRAPHY OF THE HEAVENS FOR FEBRUARY.

BY PROF. M. B. GOFF,
Western University of Pennsylvania.

THE SUN.

"Now when the cheerless empire of the sky
To Capricorn the Centaur Archer yields,
And fierce Aquarius stains the inverted year;
Hung o'er the farthest verge of heaven, the SUN
Scarce spreads o'er ether the dejected day.
Faint are his gleams, and ineffectual shoot
His struggling rays in horizontal lines,
Through the thick air; as clothed in cloudy storm,
Weak, wan, and broad, he skirts the southern sky;
And, soon descending, to the long dark night,
Wide-shading all, the prostrate world resigns."

But as the days go by, his rays no longer struggle "through the thick air" in "horizontal lines," nor does he so closely "skirt the southern sky," but higher mounting pierces with penetrating power the dark shadows, lessening "the long, dark night," driving "the dusky shades away." So rapidly do these changes occur that in four weeks our daylight increases one hour and seven minutes, or our length of days from ten hours and nine minutes on the 1st to eleven hours sixteen minutes on the 28th. On the 1st, 16th and 28th the sun rises at 7:09, 6:52 and 6:34 a. m., and on the same days sets at 5:18, 5:36 and 5:50 p. m. respectively.

THE MOON

Presents us with great regularity her changes: Last quarter on the 6th at 5:29 p. m.; new, on the 14th, at 9:13 p. m.; first quarter, on the 22d, at 5:23 a. m.; and full on the 28th, at 10:52 p. m. In apogee (farthest from earth) on the 9th, at 7:24 p. m.; in perigee (nearest the earth) on the 25th, at 6:24 p. m. Least elevation, 10th, amounting to 30° 9'; greatest elevation, 24th, equal to 66° 45'.

MERCURY,

"The fleet-footed," makes a direct motion of 43° 18' 37", moving from about the middle of the constellation *Sagittarius* and through *Capricornus*, and is the companion of Venus throughout the month (see "Venus"). Rises on the 1st at 5:55 a. m., and sets at 3:13 p. m.; on the 16th, rises at 6:12 a. m., sets at 3:50 p. m.; on the 28th, rises at 6:22 a. m., sets at 4:46 p. m. On the 11th, at 7:00 p. m., is 44' south of Venus; on the 12th, at 4:00 a. m., farthest from the sun; on the 13th, at 5:42 a. m., 5° 56' south of the moon.

VENUS

And Mercury are both morning stars during the entire month, and are so intimately connected as to afford a fine opportunity for making the acquaintance of the latter. On the 1st Venus is about one and a half degrees east and 1' 38" north of Mercury; but as Mercury moves more rapidly than Venus, he will overtake and pass her on the evening of the 11th at a point 44' south; on the 22d, he will cross her orbit to the north, and at a distance of 3½° east; and on the 28th will be found nearly 6° east and 53' north of her. Before the 11th Mercury will rise earlier than Venus; on the 11th they will practically rise at the same time; after the 11th Mercury will rise later than Venus.

On the 1st Venus rises at 6:00 a. m.; on the 16th, at 6:05 a. m.; and on the 28th, at 6:03 a. m. She sets on the corresponding days at 3:18, 3:51 and 4:19 p. m. respectively. Her motion is direct and amounts to 35° 54' 10"; on the 13th, at 5:18 a. m., she is 5° 9' south of the moon. Her diameter decreases from 11.2" on the 1st to 10.6" on the 28th.

MARS

Will during this month be both evening and morning star, changing his relation on the 11th, on which date he will be in conjunction with the sun, and will not be visible to the naked eye. His motion will amount to 21° 25' 32" direct, and his diameter remain at 4.2". On the 14th, at 10:44 p. m., he will be 4° 30' south of the moon; on the 28th, at 2:00 p. m., in perihelion, or nearest the sun. On the 1st he will rise at 7:26 a. m. and set at 5:22 p. m.; on the 16th, rise at 6:58 a. m., set at 5:24 p. m.; on the 28th, rise at 6:35 a. m., set at 5:25 p. m.

JUPITER

Rises on the 1st at 6:48 p. m., and sets on the 2d at 8:06 a. m.; rises on the 15th at 5:48 p. m., sets at 7:12 a. m. on the 16th; rises at 5:47 p. m. on the 28th and sets the next day at 5:17 a. m. On the 1st, at 2:07 a. m., he is 4° 9' north of the moon; on the 19th, at 2:00 a. m., in opposition to the sun, that is, on the opposite side of the sun from the earth; on the 28th, at 6:43 a. m., he is again in conjunction with the moon, being 4° 27' north of our satellite. During the month his diameter increases two-tenths of a second, and he has a retrograde motion of 3° 24' 8". The statement that Jupiter retrogrades some 3½° may puzzle some of our younger readers, who have doubtless been instructed in what is a fact, that not one of our planets has a retrograde motion; but that all move from west to east about the sun as a center. What we mean by retrograde is really only *apparent* retrograde; and it was something very puzzling to the early astronomers, particularly to those who thought that the earth and not the sun was the center of our system; that the sun and all the heavenly bodies revolved each day about our earth. When it was discovered that the earth revolved each day on its axis, and all the planets revolved about the sun, the retrograde motions were *comparatively* easy to understand. Let us see if we can obtain a clear idea of Jupiter's actions for this month. As we view him on the night of the 1st he appears about five degrees *east* and 1° 2' south of the bright star *Regulus*, which can be seen almost the entire night as the brightest of the six stars forming the sickle in the constellation *Leo*. Noting his position again on the night of the 28th, we find that he has moved westward about 3½°, and is only about 1½° *east* and 17' north of *Regulus*; thus, as we say, having retrograded about 3½°. To assist us in understanding this, let us take an orange to represent the sun, a grain (of mustard, for example) to represent the earth, a pea to represent Jupiter, and a point of some kind for *Regulus*. Now place these objects on a stand in the following order: In one line, at the beginning, the orange; two inches distant, the grain; eight inches farther, the pea. Next draw

a line through the center of the orange so as to make an angle of five degrees with the line through the orange, grain and pea, and at as great a distance as convenient, stick a pin to represent Regulus. Now move the grain and pea (the former about two and one-fourth times as fast as the latter) about the orange as a center, in the direction of the movement of the hands of the clock (that is, from left to right). We can readily see that on account of the more rapid motion of the grain, together with its being nearer the orange, that the pea will *fall behind*; and if we sight along the line of the grain and pea, the latter will be seen nearer the line joining the orange and the pin; and should we continue the moving of the grain and pea, making similar observations, we should find the pea approaching nearer and nearer, and perhaps even passing the line through the orange and pin. These relative motions we can see will continue until the grain makes nearly one-fourth of a circumference, after which the pea appears to make a movement in exactly the opposite direction. Now the foregoing represents tolerably well the relative positions and movements for this month of the bodies named. The earth, Jupiter and Regulus are on the same side of the sun; the earth nearest, Jupiter next (about five times as far as the earth), and Regulus next (at a distance of say 20,000,000,000,000 miles), and five degrees west of the line joining the earth and Jupiter. (These bodies we know move at the average rate of 18.38 and 8.06 miles per second respectively.) Our standpoint is the earth, and as we move eastwardly so much more rapidly than Jupiter, we find him dropping back each day, and apparently approaching nearer to Regulus, till at the end of the month we find him as before stated, only about $1\frac{1}{2}^{\circ}$ east of that star. Should we watch him through March and April, we should find him retrograding during the former month and twenty-two days of the latter, on the 23d of April being $1\frac{1}{2}^{\circ}$ west of Reg-

ulus; and on the same date, as the earth would be going directly away from him, he would appear stationary; and immediately afterward would seem to start again toward the east. Jupiter, as we know, is one of the superior planets, and an explanation of his retrograde motion explains that of all the others of his kind. A little ingenuity, putting the earth for Jupiter and Mercury or Venus for the earth, will show what is meant by the retrograde motion of the inferior planets.

SATURN

Rises at 12:58 p. m. on the 1st and sets at 3:34 a. m. on the 2d; rises at 11:58 a. m. on the 16th and sets at 2:35 a. m. on the 17th; rises at 11:12 a. m. on the 28th and sets at 1:48 a. m. on March 1st. On the 16th, at 4:00 a. m., stationary; on 23d, at 3:21 a. m., $3^{\circ} 44'$ north of the moon. Diameter diminishes one second. Will be an evening star during the entire month, and thus afford most convenient opportunities for observations.

URANUS

Has a retrograde motion of $49' 53''$; diameter, $3.8''$. On the 3d, at 3:25 a. m., is $1^{\circ} 7'$ north of the moon; on the 31st of January it rises at 9:25 p. m. and sets on the 1st at 9:23 a. m. on the 15th, rises at 8:24 p. m. and sets on the 16th at 8:22 a. m.; rises on the 27th at 7:35 p. m. and sets on the 28th at 7:35 a. m. It is now a little south of the equator, in the constellation *Virgo*, and will remain in that constellation some six years.

NEPTUNE

Is only mentioned, lest the omission of his name might be regarded as a "slight." He is a slow-goer, and, except that his presence confirms a law, we hardly know what he was created for. However, his habits are quite regular; and we note that he takes the rôle of evening star, setting on the 2d at 1:22 a. m.; on the 17th, at 12:23 a. m., and on the 28th, at 11:37 p. m. Has a direct motion of $14' 35''$; a diameter of $2.6''$; and on the 8th, at 9:00 p. m., is 90° east of the sun.

NEW ORLEANS.

BY GEORGE ALFRED TOWNSEND.

New Orleans is our most pleasing American city to persons from a northern climate. Florida presents no place important enough to illustrate a large general society. Texas has rising towns, but the Anglo-Saxon domination there brings them more and more into resemblance to our own settled English, or rather, British communities. In San Francisco we are charmed not only with a complete change of foliage, scenery, and climate, but with unexpected varieties in the population, there being a little tinge of the south of Europe as well as of Mexico and of the Celestial Kingdom in the speculative yet placid elements there. Yet New Orleans is not so hard as even San Francisco. It is a land not merely of fruit, but of the sugar-cane. It lies on that warm gulf whose farther shores were more historical three hundred years ago than now. As time advances and we complete our own connections and general developments we see more and more that the American destiny must be southward. Canada, which has had a much longer history than the United States, presents even now but a thin rim of settlement, and her entire population from the banks of Newfoundland to Vancouver's Island is not equal to that of the single state of New York. On the other hand, Mexico, through which the Americans have built costly railroad systems piercing to the very capital city, has a population certainly twice that of Canada, and probably three times the number, considering the extension of Mexico toward Central America. American diplomacy has little other ground to cover for the near future, than the republics to the south of us. The surfeit of enterprises and of productions in the United States compels us to consider a time when we must not only find mar-

kets in the Spanish American states, but shall become, if not pioneers, as we once were, certainly competitors in the Pacific Ocean, of the English, Germans, and other modern nations. We have opened a way to the Pacific by railroad, but the canal long contemplated across Central America will operate more impartially toward shippers, will cheapen the movement of goods, and incline the United States rapidly toward an understanding of the new peoples to our southwest, in methods no doubt providentially designed. New Orleans has been so clearly understood by our railroad magnates that they have hastened, almost without public assistance, to connect her not only with great points like Hampton Roads, Richmond, Cincinnati and Chicago, but the railroads are finished from San Francisco to New Orleans, and the only continental railroad system from ocean to ocean under a single management, does not pass by Chicago, but by New Orleans. The Americans originally stimulated by the governmental credit to build from the Missouri River to San Francisco, have upon their own credit and earnings stretched a railroad through California nearly to the gulf of that name, and then across the deserts and Texas, until New Orleans is at this moment the Atlantic seaport of California. Mr. Gould, who succeeded Colonel Thomas A. Scott, has stretched another railroad system parallel to Mr. Huntington's from the desert through Northern Texas and down the Red River to New Orleans.

Near the close of the past year another important railroad was built from Memphis directly to New Orleans. A little earlier last year the Cincinnati Southern Railroad was extended directly to New Orleans by the great syndicate which had

leased it. Therefore, there now run into New Orleans four lines of rail east of the Mississippi River, and two great lines west of the Mississippi. Contrast this with the railroad facilities which existed there only fourteen years ago. At that time New Orleans had only one railroad to the north, and that had certain connections, and was under no consolidated sway. It was not even connected with its adjacent city of Mobile by rail. It had no railroad facilities whatever to reach Texas, except a little piece of road which ran to the Gulf near the mouth of the Atchafalaya, and there found steamships for Galveston.

While other cities in the South have shown a cheerful energy to revive themselves, and while new cities have started up at many points, and have become respectable centers of trade, New Orleans has retained all that imperial promise under freedom which she had in the palmiest days of slavery. Perhaps no city in the South, or in the world, has so thoroughly changed its ideas, political and social, in spite of sharp contests for party supremacy there.

The great exhibition of the present year is the best instance that New Orleans means to lead the industrial spirit of the South, and to become no longer the great filibuster in the tropics, but the energetic merchant and projector there. No lawless impulse guided the erection of the great buildings which are now crowded with the productions of America and Mexico.

The attempt to let the sugar interests of Louisiana and Mississippi go in favor of the productions of Cuba and the East Indies, distinctly points the people at the mouth of the Mississippi to the fact that their alliance is probably to be with the Northern states, not merely in politics, but in commerce.

New Orleans is not the only French city in the United States, but it is the only one which preserves the French quality and language perfectly, and in that respect resembles Montreal and Quebec. St. Louis had a French and Spanish basis, but when that post became American the small Latin element was compelled, in self-defense, to adopt the language and living of the Anglo-Saxons. New Orleans, however, had a sufficient start when the Americans occupied it in 1803, to grow relatively with the American settlers and consequently two cities arose side by side, which still preserve their differences as much as if a quarter of London and a quarter of Paris had been cut out and united. Besides, there was a large rural and planting element in Louisiana, of the French stock, which has assisted to keep up the French infusion, and hence the market at New Orleans is the most characteristic thing in the city, where the *habitants* and the hucksters, the fishers from the Gulf, and the porters and carters, carry us back to a scene anterior to the France of to-day, or before republican ideas had reached the far French colonies. New Orleans, too, constantly received emigration from neighboring French and Spanish islands and coasts as they were affected by negro insurrections, or by internal revolutions. Naturally the fleeing planters from Hayti and the Lesser Antilles made their way to the nearest large town, and the steam shipping of the Gulf all concentrates at the two centers of the ellipse, New Orleans and Havana. The Mississippi River, which is the only river of the first class on the globe to pass through a cultivated land and an enlightened population, sufficiently marks New Orleans as the eye of its destiny adjacent to its mouth. There are many Americans who have never been to New Orleans, who are unaware that it, like New York, has two distinct harbors or outlets. As New York has Long Island Sound and the Bay of New York, one opening a hundred miles to the east of the other, so New Orleans has a lake system close by which gives her internal communication far to the east, or almost to the bay of Mobile, and saves her two hundred miles of round-about river navigation to reach her own coasts. It may be thought that New Orleans is too far from the mouth of the Mississippi to command that the commerce of the Gulf should come a hundred

miles up that river for her benefit, yet Philadelphia and Baltimore are quite as far from the ocean, and these cities have easily commanded a great interior trade through the communications they possessed, and from the products they had to supply. Coal, for example, makes the most effective article of the commerce of both Baltimore and Philadelphia, and coal is more valuable in the Gulf because farther from the mines, than it is on the near east coast. The coal furnished to the shipping at New Orleans has descended the entire line of the river, yet by such easy facilities that at New Orleans it is probably the cheapest coal in the world for the distance it has to come to get a market. Great floats, of which dozens are hauled by a small tug or tow boat, go down the Ohio to its mouth, and pass on to New Orleans and are there so easily discharged that the lumber in them finds a market with the coal.

Besides, the railroad projectors, without other inducement than their own sagacity, have concurred in running all their railroads to New Orleans, for the country at the mouth of the Mississippi is neither so healthy nor so strategical for trade as this old town which was founded by the French under the direction of their government when they picked slowly and carefully the sites of future trade and military empire. These same French located St. Louis, and it has not been found advisable by any succeeding generation to try a better situation.

We may ask whether New Orleans has as great an antiquity as our own English cities? It is not as old as Philadelphia by almost thirty years, and is somewhat younger than Charleston, and is about fifteen years older than Savannah. Of course it does not compare in antiquity with the colonial cities of the northeast, such as New York, Albany, Boston, Montreal and Quebec. But it is nearly a century older than any of our important Anglo-Teuton cities of the West. It is more than half a century older than Cincinnati, and we may almost call it a century older than Chicago. St. Louis was its Albany, or upstream neighbor, and was under the same political domination. Mobile was the parent place the French established on the Gulf, and Governor Bienville made New Orleans his capital as late as 1723, or about nine years before the birth of General Washington.

Soon after this a levee was built in front of the new town, and the early French authors and novelists took pleasure in visiting it, and even at that date they called it "the famous place." As in Quebec and Montreal, the early French settlement was almost simultaneous with the bringing out of monks and nuns, and soon a cathedral was conceived and nunneries were built. The French, however, had not the vigorous nature of the English in founding new places, and after nearly half a century of occupation there were hardly three thousand persons in it to transfer to the Spanish who took possession of the place in the midst of a revolution, and had some of the best French citizens shot in order to be a terror to what the Spanish governor, O'Reilly, already suspected to exist in French Louisiana, the spirit of independence, which Spain wanted to extirpate in all her colonies, fearing that they would speedily rise to importance and overwhelm the parent power. Spain had been dismembered by a treaty early in the eighteenth century, and was left with enormous American possessions, and with a very small Spain to handle them. The Spanish cabinet then conceived the policy of preventing the growth of the colonies, so as to keep them down, use them merely for trade, and not let that spirit of municipal independence which makes great fermentations in states commence anywhere. Some of the Spanish governors, however, ordered public buildings to be constructed, and the American residents at New Orleans say that the Spanish sway of about forty years has left better monuments than the French.

A Spanish infusion of settlers marks the present population, and the Americans call all the Latin races, no matter whether they come from France and her islands, or Spain and her coasts, by the name of Creoles.

A curious feature of New Orleans is the existence of considerable elements there from states as foreign to ourselves as Yucatan.

At the close of the American Revolution there were less than five thousand persons in New Orleans. During that Revolution a considerable number of respectable British settlers who wanted to avoid the War of Independence, settled in West Florida and about Natchez, and in other spots contiguous to New Orleans. Hence the Revolution was hardly over before the first chapter of manifest destiny was directed from Pennsylvania, Ohio and Kentucky upon the opening of the Mississippi River. That physical achievement was so important to the producers on the Ohio and the Tennessee Rivers that schemes of every sort were tried to hasten the opening of commerce to the Gulf. One Senator of the United States was expelled from his place for an intrigue partaking of the nature of treason with the British who still backed up the Spanish on the Gulf; and a Vice President was actually pursued nearly to the Gulf and brought back and tried for treason at Richmond. How long the United States might have had to wait the slow course of diplomacy or the rough chance of war to get New Orleans, is uncertain, but Napoleon, who had acquired Louisiana by his mastery over Spain, believing that he could not hold it against the English fleets, made haste to sell it to the Americans for a sum of money and old commercial claims.

Eighty-two years ago, or about the rounded lifetime of an old man, the Americans occupied New Orleans, and much of the city burnt up the year our forefathers were voting for the first President of the United States. A French newspaper had been issued in New Orleans several years before the American possession. There were perhaps eight thousand persons in the city when it was transferred to us. Twelve years after the transfer, the Americans under General Jackson had to give battle to hold the city, which the English attacked with the best troops they had used in Spain against Napoleon who had already fallen. Napoleon was contemplating his last endeavor to astonish the world at Waterloo, when the English and Americans, unconscious that a treaty of peace had been made between themselves, fought the battle of New Orleans, which resulted in more disaster to the British arms than any battle on land during our second conflict for independence. In St. Paul's Cathedral stand the monuments and statues of Packenham and Gibbs who lost their lives in the marshes around New Orleans.

In 1862, Farragut with his fleet took New Orleans. His victory drove an entering wedge into the heart of the Confederacy and gave to the navy of the United States a prestige which it had never enjoyed and which in its present enfeebled state it is rapidly losing. New Orleans was the wealthiest and most populous city of the Confederacy; it was four times larger than either Charleston or Richmond, and before the war had the largest export trade of any city in the world. Commanding mid-continental navigation and being the key to the Gulf, its military value was equal to its commercial importance.

The plan for the capture of New Orleans by the navy, and the reduction of the forts which guarded the approach to it from the south, originated in the Navy Department in the fall of 1861. The credit for proposing this plan has been claimed by more persons than one, and it is likely that it was conceived and developed from suggestions and hints received from a variety of sources. It was determined that a naval expedition should be sent against New Orleans. The plan found little favor with army officers, but the President became interested in it and Secretary Welles set about carrying it into effect. The attention of military men was concentrated on a proposed combination of the forces of the army and the navy for the capture of New Orleans, in an expedition which was to descend to the city from the upper waters of the Mississippi River. This scheme seemed more attractive, and the idea of

taking New Orleans by means of a fleet advancing from the Gulf had never been entertained in military circles. When Stanton became Secretary of War and was told of the proposed naval expedition, he was astonished at the originality and audacity of the idea and exclaimed: "An attack upon New Orleans by the navy! I never heard of it! It is the best news you could give me." Secretary Stanton entered cordially into the spirit of the project and increased the number of the troops which General McClelland had promised, from ten thousand to eighteen thousand. Shortly after this, General B. F. Butler was made acquainted with the purpose of Secretary Welles and he was given the command of the military force which was to hold New Orleans after the fleet had taken it. There is no evidence that General Butler suggested any of the important plans or details for the expedition or that he had any definite plans concerning it.

Congress had ordered the blockade of 3,500 miles of coast line. There were scarcely ships enough to maintain it, and the vessels for the New Orleans expedition had to be built or procured from other sources. After the Secretary of the Navy had decided to send a fleet against New Orleans and had given orders for the construction of it, the most serious question which presented itself was the selection of a commander. All of the naval officers of high rank were suggested and considered. It was to be the most powerful and splendid fleet ever gathered under the stars and stripes, and the Department moved cautiously in the matter of choosing a leader for it. Finally the name of David Glasgow Farragut was proposed. The Secretary of the Navy remembered that years before in the war with Mexico, Farragut had offered a daring plan for the capture of the strong fort of San Juan de Ulloa, at Vera Cruz. He proposed that the fort be "boarded" by attaching long ladders to the masts of the attacking ships, which should then be towed up to the walls of the fort. Secretary Welles was impressed at the time with the boldness and dash of the scheme, and though he had not seen Farragut since that day, and really knew very little of him, yet after some consultation he decided to offer him the command of the fleet. Farragut, who had never had a squadron, gladly accepted the honor and he responsibility. He had been trained by a life of study and active service for some great emergency like this, which came late in life, in his sixty-second year, but he was prepared for it and he knew it. Farragut adopted the plans which had been considered by the Navy Department and made them his own. He grasped the work before him with a degree of earnestness and enthusiasm unusual in men of his age. Secretary Welles says of him at that time: "In every particular he came up to all that was expected or required of him. He determined to pass the forts and restore New Orleans. He might not come back, he said, but the city would be ours." After his arrival at Ship Island on the 25th of March, 1862, Farragut wrote: "I have now attained what I have been looking for all my life—a flag—and having attained it, all that is necessary to complete the scene is a victory. If I die in the attempt it will only be what every officer has to expect. He who dies in doing his duty to his country and at peace with his God, has played out the drama of life to the best advantage." Here was a genuine pious hero of the old school, determined to do or to die. His task was a herculean one. New Orleans was defended by two forts erected at the lowest favorable point for the location of military works, above the Gulf. Fort St. Philip occupied the left bank of the river, and a short distance below it on the right bank stood Fort Jackson. These forts mounted in all one hundred and fifteen guns. A fort on the site of Jackson in 1815 held the British fleet in check for nine days. The rebel forts were garrisoned by 1,500 men commanded by General J. K. Duncan. A short distance above the forts lay fifteen rebel vessels. This fleet included the iron ram "Manassas" and a great floating battery clad with railroad iron. Below the forts a heavy chain supported by the hulks of eight dismasted ships obstructed the

river. Farragut was to break through the chain, fight his way by the forts, destroy or capture the rebel fleet and then steam up to New Orleans and place that city under his guns. The attack was commenced by the mortar fleet. For six days the mortars poured a ceaseless fire of shells into the fort. The shells were flying through the air at all times; nearly six thousand were thrown, but the forts were damaged very little and the Confederate loss was only fourteen killed and thirty-nine wounded. It was determined to pass the forts on April 24th. At sunset on the 23d there were indications of the approaching conflict on every ship in Farragut's fleet. The attack was to be made under cover of darkness. At eleven o'clock that night an officer signaled that an opening which had been made in the chain was still clear. Five minutes before two o'clock in the morning two red lights were displayed from the peak of the flag ship. It was the signal to steam up the river. In about one hour the fleet of seventeen vessels, in three divisions, was moving. The moon was rising, but its light was lost in the fierce flames from bonfires and fire rafts. Both forts opened fire upon the first ship as she passed through the row of hulks. Five minutes later the little "Cayuga" was pouring grape and canister into Fort St. Philip, and in ten minutes more she had passed from the range of its guns and was in the arms of the rebel fleet. It was a lively moment for the brave little boat. Eleven rebel gunboats tried to demolish her at once. She could not go forward, she would not go backward. There was nothing to do but to close with the enemy. She drove an "eleven inch" shot through one of her antagonists and it ran aground and burned up. Another one was crippled by a well directed shot, and the "Cayuga" was about to grapple with the third when two ships of the Union fleet came to her aid, the "Oneida" and the "Varuna."

The former ran into one of the rebel ships and almost cut her in twain. The "Varuna" was rammed by the "Manassas" and another ship and went to the bottom in fifteen minutes. While she was going down she fired into one of her adversaries and so damaged her that she had to surrender to the "Oneida," and she sent a shell into another rebel gunboat which exploded its boiler. All the time the remaining vessels of the first division were steaming by the forts, pouring tremendous volleys into them and receiving tremendous discharges in return. Farragut's flag ship, the "Hartford," led the second division of the fleet. She was a noble vessel, splendidly equipped; she steamed into the fight and was followed by the long line of ships in the second and third divisions. By this hour day was dawning, but heavy clouds of smoke hung over the river and no light from the east reached the battling ships. The cannonading which all along had been terrific was now growing sublime. Three hundred heavily shotted guns were flashing and roaring over the dark water. The Union ships advanced to the fray like the famous "Light Brigade," with cannon to the right of them, to the left of them and before them. Probably it was the most picturesque naval battle in the world's history. Thirty-four armed vessels and two great forts were struggling in the early morning. The sun seemed to stand still in the heavens. The light of the guns was brighter than the orb of day, and Farragut's gunners had to aim at the cannon flashes from the rebel forts. The forts themselves were not visible. The vessels of the enemy were not visible. Our ships were striking great blows in the dark and they always struck with deadly effect. From points above the rebels pushed great fire barges loaded with blazing pitch and cotton into the stream. These rafts came floating down and when they did not ignite our ships they illuminated them for the Confederate marksmen. A flaming fire raft was hurled against the "Hartford" and flames ran from the water's edge to the mast top. The well trained crew extinguished the fire and within five minutes the "Hartford" destroyed a rebel steamer filled with boarding parties. The "Brooklyn," another Union ship, encountered a fire raft and for a time lay helpless before the merciless guns of Fort Jackson.

Disentangling herself, she steamed up to the fort and poured such withering broadsides into it that its guns were silenced for a time, and the gunners were seen by the ship's crew as they peered through the cannon-lighted portholes, to be fleeing from their guns. At this time the vessels which had passed the forts were doing good work, and the stream was filled with wrecked and burning Confederate gunboats. Fire rafts and wrecks came drifting down side by side, and frequently one of the latter would explode with a loud report. The low, curved iron rams glided about like gigantic serpents of the sea. Boarding parties were overrunning some vessels and being repulsed from others. It was an awful, dazzling and furiously shifting panorama. The last ship to pass the forts on that memorable morning was the "Penola." In the light of a blazing raft she received the discharge of the forty guns of St. Philip, and passed on to join the victorious fleet above. "And thus," says Farragut's son, "was accomplished a feat in naval warfare which had no precedent, and which is still without a parallel except the one furnished by Farragut himself two years later at Mobile."

On the morning of the next day the fleet moved up to New Orleans. At noon Captain Bailey was sent to demand of the mayor of the city its unconditional surrender, and that the flag of Louisiana be removed from the City Hall. The mayor refused to haul down the flag or to make a formal surrender of the city. While the officers and men of the fleet were attending divine service the next day, they were startled by the discharge of a howitzer from the main mast of the "Pensacola." The watchman in the rigging had seen four men tear down the flag of the Union from the roof of the mint, and had at once fired the gun which was trained on the flag staff.

On the 28th the forts surrendered to Commander Porter, who had been pounding away at them with his mortars. May 1st, General Butler and his troops entered New Orleans, and Farragut turned the city over to him. His administration was vigorous, but was hateful to the citizens. He hanged Mumford, the leader of the mob which tore the Union flag from the mint; he issued his celebrated woman order which placed every female who insulted a Union soldier on the level of the street walker; he treated with severity a Mrs. Phillips, who jeered at the remains of a Union soldier. He is condemned for all of these things by very many people. Many dishonest things were done during his administration, but repose, vigor and security were the characteristics of it. General Butler was a just, efficient, straightforward tyrant, not cruel, but possessed of an inflexible determination to make his will the law and to make his cause succeed. After General Butler came General Banks. He endeavored to restore loyalty to the state by good treatment, but fell into the error of reposing trust in a type of men who could not understand freedom nor adopt even a business patriotism for the sake of their own prosperity.

By the census of 1880 New Orleans showed for three-quarters of a century of American rule a population of 216,000 people, of whom 175,000 are natives of the United States, and only 58,000 are colored people. New Orleans stood the tenth of American cities, with more than 36,000 houses, and more than 45,000 families. Although the manufactures of New Orleans were in their infancy they had an annual product of nineteen million dollars, and paid nearly four million dollars a year wages. Looking over the list of states to discover the origin of the people of New Orleans, the remarkable fact appears that of her 216,000 people more than 151,000 are natives of Louisiana. The neighboring state of Mississippi has not put thirty-eight hundred souls into New Orleans. Alabama, which is within two or three hours' ride by cars, has not two thousand native children in New Orleans, but New York has over two thousand of her progeny settled in New Orleans, and Virginia has 4,300. Of the 41,000 foreign population, nearly 7,000 are natives of France, showing that there is a constant immigration, as in the days of Bienville, from old France to new France.

Germany has contributed to New Orleans 14,000 emigrants. About the same number have come to New Orleans from Great Britain and Ireland. Spain has contributed about 800 of her natives, Italy about 2,000, Switzerland nearly 500, Mexico only 300, and the West Indies scarcely 400. These are suggestive figures, and show that since the great rebellion those elements go to the far South which have the most original emigrating spirit and the greater variety of self-sustaining trades and pursuits. A man who can do nothing, make nothing, improve nothing, has the least of all motives to emigrate. The debt of New Orleans was about seventeen million dollars at the last advices, considerably less than the debts of Baltimore and Washington, but some four millions more than the debt of Chicago. Railroads and other municipal improvements were responsible for a good deal of this debt.

Since the war New Orleans has been transformed from the likeness of a quiet old French city like Orleans which gave it name, to the appearance of a new French city with pretty relics here and there, and strong cosmopolitan attachments. The great river which sweeps in splendid curves past this city has compelled the streets to conform to some extent to its shores, but the consequence is a charming disposition of streets to both those who hate crooked streets, and those who hate straight ones. The town may be likened to the spokes of a wheel with streets laid out between the spokes in both directions, and con-

forming to them to some extent. In front of the city stretches the great bank called the levee, at the foot of which ride the majestic steamers which come from all portions of the Mississippi valley and are often like palaces in cardboard, and since the jetties have been made a success by Captain Eads and the United States engineers, you also see at New Orleans, riding cosily, the huge steamships from New York, Liverpool and Cuba. The chief maritime lines from New York to Texas now stop at New Orleans and the journey is continued by rail. This great levee, which is an artificial hill thrown up to keep the river back, is lined with the sugar hogsheads and cotton bales of the South, with coal and iron, plows and stoves, kegs of nails, merchandise assembled from all parts of the globe, and massive presses driven by steam to further compress the bales of cotton and reduce them in bulk for shipment. A canal runs through the city, and its other termination is on Lake Pontchartrain. At the lake is a beautiful new resort built in recent years, nearly as agreeable as Chautauqua Lake, and the peculiar Creole and negro cooking of New Orleans is to be found in perfection there, as well as at the Spanish fort, in the environs of the city. The shops of New Orleans are open to the air all winter long, and art of a local nature is taking root there. Whatever the Gulf produces is to be seen at the Creole capital, and a visit to it for even a few days is the next thing to a trip to Europe.

THE UPPER CHAUTAUQUA.

BY CHANCELLOR J. H. VINCENT, D. D.

There is a Chautauqua further on. First, there is a lake level, and just above it is the level of the "Point," with its pleasant grass, its winding walks, its old Auditorium, shaded and hallowed with memories that have grown through multiplying years. The old cottages, and many of the old cottagers remain about this Auditorium—reminders of the old times, and the oldest times, of Chautauqua, when the first vesper service announced that "The Day Goeth Away," and the "Nearer My God to Thee," rang out under these forest arches. Who that was there can ever forget that hour? The altars were aglow that night, and hearts on fire. It was an experiment, but from the first it was an assured success. The time will come when the remaining sharers in that first feast in the evening light will be very few, and the last of them will receive honor, and the children of Chautauqua will listen to their story as with quivering lips and kindling eye they speak about that first evening under the trees, the words that broke the sacred silence, the songs that bore praise and wonder and joy to the heavens, and the friendships that were formed there never to be broken.

How many who joined in the first Chautauqua service have already "fallen on sleep" and gone out into a world sleepless and without nightfall, where, for vesper chant are substituted the hallelujahs of an eternal morning.

But let us go up higher. Beyond the Point and Auditorium level are the terraces that run along the hillside, one above another, gardens and cottages, with pathways and winding roads, leading up under welcome shadows to a higher Chautauqua—a long stretch of table-land crowned now with Temple and Chapel, Pyramid, Museum and Hall of Philosophy, while beyond, in the open fields toward the north we reach the highest point of our Assembly grounds, one of the highest on the lake. Thus from the landing and the beginning of our journey we ascend from the lowest to the highest, and find beauty, delight, pleasant welcomes and rewards all the way.

This study in the lay of the land which makes the physical Chautauqua is an allegory. There is an upper Chautauqua.

And not all who visit the place see it, and not all who become Chautauquans reach it.

The Chautauqua movement is progressive, and its friends and students are expected to make advancement in the line of its conceptions and provisions. It has court beyond court in which it unfolds its progressive aims and introduces its disciples to the higher privileges of culture which it provides. No fences or lines mark these successive stages. They do not correspond with the topographical elevations, although we have found in the one a figure or symbol of the other. But such gradation exists, and I shall point it out.

I. THE ASSEMBLY—Is the first point of approach to the true Chautauqua. It is the outer court open to the whole world. It has no restraints upon those who come, save those which are necessary to guarantee a financial support to the institution, and those rules of ordinary decorum which are essential to the quiet enjoyment and profit of those who pay their tribute and wait for the promised compensation. And this compensation comes in lectures on the widest range of topics, from the "Philosophy of Locke and Berkeley" to the light and cheery discussions about "Fools and their Folly." Concerts by gifted artists, characterizations by rare impersonators, illustrations of life and manners in remote regions, by the aid of costumer and *tableaux vivants*, stories of travel, with photographic accompaniments colored, magnified, and illuminated; sermons by able ministers, lessons by competent teachers, attractions for lighthearted youth and wearied but rational age, in bonfires, processions, fireworks, illuminated fleets—these are the features of the outer court of Chautauqua for the entertainment, awakening, and broadening of people who come with no far-reaching or serious purpose, but who come to "hear" and "see" and have "a good time." They are simply recipients. The will-power lies dormant, save as some stirring statement of lecture or sermon, or some unsyllabled passage in music opens the soul to the worlds all about it replete with marvel, beauty and power. So much for the outer Chautauqua. There are those who see this—only this and nothing more. They

come and go. They wonder why they and others come, and yet they think they may come again—but are not sure. They do not forget Chautauqua, and they do not “go wild” over it. They smile at other people, whom they call “fanatics,” because they are full of it, and “bound to come again,” and to “come every year,” and always, and “would be willing to live there.” These have seen the Upper Chautauqua—for beyond the “Assembly” is

II. THE CIRCLE.—It is another court—further in, and a little higher up—with a white-pillared hall among the trees—“The Hall in the Grove,” about which a book has been written, and in which songs are sung and weird services held, and where strange inspirations fall on people. For those who belong to the Circle—the “C. L. S. C.” as everybody calls it—are advanced Chautauquans. They know why they come to the place. And they know when to come. They keep a calendar, and they mark the feasts, and they know what to do when they are there. They seem at home. There are hosts of them—all knowing each other, and apparently bound together by some secret association which has a mystic power. They wear badges on certain days, badges of different styles and colors and legends. In all this there is something singular and beautiful.

This “Circle” is a company of pledged readers in wide ranges of literature. The “Assembly” contains people who listen. The “Circle” is made up of people who read. The “Assembly” covers a few weeks. The “Circle” casts its canopy over the year and the years. The “Assembly” is at Chautauqua. The “Circle” carries Chautauqua to the world’s end—to the east and to the west, to Canada, to Florida, to Scotland, to the Sandwich Islands, to India, and Japan, to Cape Colony—everywhere.

The members of the “Circle” stand on a higher plane than the Assembly, because they put will into the work. They read what they ought, for months and years, everywhere, getting larger views of the world, and worthier views of life, and nobler views of the race, and of God the Father of all.

The “Circle” takes a wide sweep in the world of letters. Its themes are those of the college world. It puts the preparatory and college curriculums into good, readable English, and helps people out of college to know what is going on there; what the young people study in history, language, and literature; what authors they read, and what estimate is to be placed on them and their work. It gives glimpses of science, physical and metaphysical—pointing down to the rocks and up to the stars, and about to the fields and seas and the forms of life in

plant and animal. Whatever college boys study, the “Circle” provides in some form and degree for parents to read, that home and college may be one in outlook and sympathy, in aim and delight. But there is something beyond.

III. THE INNER CIRCLE.—Beyond the readers are the students—those who have completed the four years’ reading in the “Circle,” and the members of the “Society of the Hall in the Grove;” have filled out the various memoranda; have certain seals on their C. L. S. C. diplomas, testifying to this fact, and to the reading of the additional books. These walk on the higher levels. Their names are enrolled in the “Order of the White Seal.” Their faces are turned toward the Upper Chautauqua.

It is possible that the members of the C. L. S. C. who walk in the inner circle may meet those who rank with them, although they have come hither by other routes—through the “Chautauqua Teachers’ Retreat,” the “Chautauqua Spare Minute Courses,” and the “Chautauqua Assembly Normal Courses.” As students, they all rejoice in the larger places of Chautauqua. But there are heights beyond these heights.

“Hearers,” “readers,” “student-readers,” successively mark the three ascending grades of the Chautauqua movement, as outlined in the “Assembly,” the “Circle,” and the “Inner Circle.” Beyond these three stages, we come to

IV. THE UNIVERSITY CIRCLE.—Here are members of “The League of the Round Table,” whose seven seals on the C. L. S. C. diploma entitle them to this higher honor. Here, too, are advanced students in the “Chautauqua School of Languages;” these walk in the outer courts and among the sacred corridors adjoining the University itself. Chautauqua now means more than ever to them. The towers of the University rise above them. They ask why its doors may not open to them, and why they may not rejoice in work, real work, with after-tests in genuine examinations, and after-honors in diploma and degrees.

Some remain in this goodly place, hearing the songs that float down from the higher halls, enjoying converse with their fellows of the grander degree, and encouraging other and younger and more vigorous companions to go up and possess the land. Others knock at the door by the upper step, and as it opens, they enter the fifth and highest form of the Chautauqua movement—

V. THE UNIVERSITY, with its schools, colleges, and *academias*; its teachers and professors, its text-books and tasks, its rigid examinations, and its promotions. Concerning the UNIVERSITY, I shall write later on.

OUTLINE OF REQUIRED READINGS.

FEBRUARY, 1885.

First Week (ending February 7).—1. “College Greek Course,” from page 83 to 107.

2. “Chemistry,” chapters I, II and III.

3. “How to Help the Poor,” from page 1 to 32.

4. “How English Differs from other Languages,” in THE CHAUTAUQUAN.

5. Sunday Readings for February 1, in THE CHAUTAUQUAN.

Second Week (ending February 14).—1. “College Greek Course,” from page 107 to 133.

2. “Chemistry,” chapters IV and V.

3. “How to Help the Poor,” from page 32 to 66.

4. “Temperance Teachings of Science” and “Home Studies in Chemistry and Physics,” in THE CHAUTAUQUAN.

5. Sunday Readings for February 8, in THE CHAUTAUQUAN.

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Third Week (ending February 1).—1. “College Greek Course,” from page 133 to 154.

2. “Chemistry,” chapters VI and VII.

3. “How to Help the Poor,” from page 66 to 92.

4. “Kitchen Science and Art,” in THE CHAUTAUQUAN.

5. Sunday Readings for February 15, in THE CHAUTAUQUAN.

Fourth Week (ending February 28).—1. “College Greek Course,” from page 154 to 187.

2. “Chemistry,” chapter VIII.

3. “How to Help the Poor,” from page 92 to 125.

4. “The Circle of Sciences” and “Huxley on Science,” in THE CHAUTAUQUAN.

5. Sunday Readings for February 22, in THE CHAUTAUQUAN.

PROGRAMS FOR LOCAL CIRCLE WORK.

FIRST WEEK IN FEBRUARY.

1. Essay The Life of Plato.
2. Selection—"Translators of Homer." From the "Prose Writings of William Cullen Bryant," vol. ii.
3. Fifteen minutes' talk on Home Decoration.
4. Select Reading—Extracts from the Life of Pericles, found in "The Young Folks' Plutarch."
Music.
5. Essay Lavoisier and the Phlogiston Theory. [In the "History of the Inductive Sciences," by Whewell, a good reference will be found.]
6. What we have all seen (mentally, perhaps,) at New Orleans this week. [Reports being made by each one of what he has read, heard or witnessed.]
7. Report of Critic, who is to be appointed at the beginning of the evening, and who is to note and correct all mistakes.

MONTHLY PROGRAM.

1. Roll call—Quotations from Æschylus, taken from the "College Greek Course."
2. Essay Socrates.
3. Select Reading—"Valentine's Day." By Charles Lamb. [Found in his "Elia."]
Music.
4. A General Talk on Huxley and his Teachings. [Let each one come prepared to read or tell something about him.]
5. Essay The Greek Drama.
6. Debate—Resolved, that it is wrong to feed tramps.

FOUNDER'S DAY—FEBRUARY 23.

"He tried the luxury of doing good."

Music.

1. Roll-call—Quotations on the Companionship of Books.
2. Essay New Departures in Education. [Reference can be made to Pestalozzi, Froebel, Col. Parker, and others.]
Music.
3. Recitation Alone with My Conscience. [Found in THE CHAUTAUQUAN for October, 1884.]
4. A Paper on the Chautauqua Institutions.
Music.
5. Select Reading—Proper Method of Employing Time. By Addison.

LOCAL CIRCLES.

C. L. S. C. MOTTOES.

"We Study the Word and the Works of God."—"Let us keep our Heavenly Father in the Midst."—"Never be Discouraged."

C. L. S. C. MEMORIAL DAYS.

1. OPENING DAY—October 1.
2. BRYANT DAY—November 3.
3. SPECIAL SUNDAY—November, second Sunday.
4. MILTON DAY—December 9.
5. COLLEGE DAY—January, last Thursday.
6. SPECIAL SUNDAY—February, second Sunday.
7. FOUNDER'S DAY—February 23.
8. LONGFELLOW DAY—February 27.
9. SHAKSPEARE DAY—April 23.
10. ADDISON DAY—May 1.

One of the most profitable half hours of the local circle evening is that spent in general conversation on a particular topic. It furnishes a practice which is of incalculable value. At the same time it is not possible to put a number on a program of

6. A *Conversazione*—Subject: What Chautauqua has done for me. [Entered into informally by all members of the circle.]
Music.

LONGFELLOW'S DAY—FEBRUARY 27.

"High as our hearts he stood."

1. Roll call—Quotations from Longfellow.
2. Let several members who have been appointed beforehand give brief accounts of different periods of the poet's life, such as: His early life, his years in college, his life as a college professor, his travels abroad, his literary work, his home in the Craigie House, and his love for children.
Music.
3. Recitation "The Hanging of the Crane."
4. Select Reading Extracts from "Outre-Mer."
Music.
5. Essay Longfellow's Characteristics as a Writer.
6. Recitation—"The Poet and the Children." By John G. Whittier.
7. A Paper—The Tributes to Longfellow by Eminent Men and Women
8. An analytical study of the poem "Sandalphon."

A delightful Longfellow entertainment may be arranged from "Evangeline" or "Miles Standish." The poem chosen should be carefully cut so as not to require more than an hour for reading. Let a good reader be chosen, and as he reads let the most picturesque and striking passages be represented by tableaux.

Help in preparing programs for Longfellow's Day may be found in the following articles: *The Century*, June, 1882, "Henry Wadsworth Longfellow," poem; *The Century*, October, 1883, "Longfellow;" *The Century*, November, 1878, "Henry Wadsworth Longfellow;" Allibone's "Dictionary of Authors;" Griswold, "Poets and Poetry of America;" Duyckinck, "Cyclopædia of American Literature," vol. ii.; *North American Review*, January 1840, July 1842, July 1845, and January 1848; *Fraser's Magazine*, March 1848; *British Quarterly Review* for January and April 1864; *The Literary World*, vol. xii., No. 5; "Homes of American Authors," by George William Curtis; "American Classics for Schools," vol. i.; "Longfellow Leaflets"—these convenient little slips have been prepared for schools, but will be found very useful for large circles. They may be had of Houghton, Mifflin & Co., Boston, Mass.

which it is more difficult to make a perfect success. Of course many circles have learned the art of talking. At SHILOH, N. Y., the "Atlantic" circle of sixteen members, a busy, prosperous organization, to introduce variety into their programs,

often hold a "meeting of informal conversation," but very many of us can not succeed. At the root of our trouble lies that totally false idea that the ability to converse is the gift of a few. When leaders suggest a *conversazione* the difficulties presented seem almost insurmountable. The members contend that they can not talk; they will not try; they urge that while history and science make excellent studies, they are too "heavy" for conversation; they fly the subject and intrude a chit-chat which totally destroys serious conversation. Some time ago we saw successfully tried in a circle of about twenty members, the following method for cultivating conversation: The subject was introduced by the leader in a brief and earnest talk. He showed the barrenness of ideas and the lack of fine and exact expression in our social converse. He urged the possibility and the duty of every one becoming an entertaining talker. An interest was thoroughly aroused, and a vote was carried by the society to devote a half hour to talking on subjects suggested by the C. L. S. C. readings. Each member promised to confine himself to the subject, to come prepared to follow the whole subject, and to give particular items on certain points. Members were bound to ask questions, to look up pictures to illustrate, anecdotes to enliven and wise words to enforce the points brought out. They learned to talk, and to talk on worthy subjects. Their experience soon grew to be a little like that which happened to a member of the HOLLISTER, CALIFORNIA, circle. A lady meeting her, remarked: "I am getting jealous of those Chautauquans, for if two of them meet they can talk of nothing but those old Greeks." Our friends grew to talk so well that a lady, applying for admission, said: "I want to join your society, for it seems to me that a society which inspires so much intelligent conversation must be very valuable." Every circle of the C. L. S. C. which has had experience in this work should lend to others its ideas and suggestions. But now let us turn to something which is much easier to chat over than are methods for improving ourselves in conversation—our circles.

NOVA SCOTIA gives no hint in its report from the HALIFAX C. L. S. C. of the bleakness which we usually associate with its stormy northern coast. This Halifax circle announces itself in a flourishing condition, with a regular membership of fifteen and with twenty or thirty regular attendants. The growth of the work in Nova Scotia is apparent to them and they look for an addition of many members soon. Already the number of members in Nova Scotia is nearly double that of last year.

At the extreme eastern point of MAINE, in the pretty village of LUBEC, the "Pansies" have taken root. The busy little "Quoddy" circle of eight members forms the nucleus around which, we trust, will collect a future legion of as interested members as are our present friends.——Another Pine-Tree state town, BROWNFIELD, has a circle reading its third year's course. It would be difficult, they think, to find more enthusiastic workers.——On the southern point of the beautiful Moosehead Lake, in the town of GREENVILLE, a circle of "Plymouth Rocks" was founded in November, 1884. The class express increasing interest in their readings, and are confident of a large growth in numbers during the year. The "North Star" is the pretty name they have chosen for their circle.

NEW HAMPSHIRE sends two year-old circles to our columns this month. One from TILTON reorganized last fall with twenty-four members. They meet fortnightly and remember all the memorial days. May their name, "Winnipisaukee," prove auspicious, and the "smile of the Great Spirit" be ever with them.——The "St. Paul" circle, which was organized in the fall of 1883, at MANCHESTER, N. H., but not reported to THE CHAUTAUQUAN, was reorganized last fall with a membership of thirty-seven. They have in the circle twenty-one of the class of '88, while only five are of the class of '87—a proof that the "Chautauqua Idea" is growing in favor. They prepare

interesting programs consisting of essays, readings, talks, etc. Also, they use the "Chautauqua Songs," and find them a great help.

The circle at PLAINFIELD, VERMONT, consists of fourteen hard working members and is in its first year. They find great enjoyment in their reading. Last November, the loss by death of one of their most active and loved members, Mrs. F. A. Drinell, threw a shadow over their circle, but they have persisted in their work.——To the numbers of pretty programs which have come to our table has been added a neatly painted one from RUTLAND, VT., a souvenir of the Milton Memorial Reception held by the "Alpha" branch of the C. L. S. C. This entertainment was very highly complimented by the local press.

A member of the "Mizpah" circle of NEW BEDFORD, MASS., pays a very high compliment to the character of that circle's work. He writes that he has learned more of Greek history and literature in the four meetings which their circle had held when he wrote, than in all the time he gave last year to solitary study. Certainly the circle must be accomplishing its design of doing "solid work." Nor are their numbers, though but six, a drawback. A small circle, if perfectly congenial, has some strong advantages.——Last month EAST WEYMOUTH, MASS., reported the circle which has had such a vigorous growth this year. Now we hear of a new circle in the sister city of SOUTH WEYMOUTH, and very soon we may hope to do something more than formally introduce our new friend.——The "Parker Hill" local circle, of BOSTON, organized in September, 1883, has become so much interested in the circles which month after month send their greetings and their suggestions to THE CHAUTAUQUAN's columns, that it joins our number. Very glad we are to present it—the only circle, so far as we remember, composed entirely of young men. Thirteen of them form this club, all of them connected with the Highland Congregational Church, of which the Rev. A. E. Dunning, the honored president of the "Plymouth Rocks," has been pastor. A particularly happy suggestion, it seems to us, is contained in a special feature of their program. They require each member to suggest at each meeting, in writing, some subject for the next meeting's program. These suggestions being read by the president, the circle selects from them a sufficient number of topics to occupy the allotted time. The subjects are then assigned to the various members.——From two other Massachusetts circles come pleasant letters. One from CAPE COD says: "We call ourselves the 'Seaside' circle, and our name is very appropriate, for 'the sea' lies both east and south of us. We are located in the 'elbow' of the 'right arm' of Massachusetts, and scarce an hour in our lives passes that we do not feel the invigorating breezes of the Atlantic Ocean. At present we number fourteen regular and three local members, one '85, four '87s, and the rest '88s. Our enthusiasm is great, and, as is the experience of every local circle, increases with every meeting."——And another from FALMOUTH: "Our 'Neptune' circle is prosperously started this year with twenty-three active members. We are encouraged, as this is more than double our last year's membership. We try to keep the line of study for each evening separate, one evening being devoted to science, another to Greek. Last week we took up the 'Iliad,' different members giving five-minute sketches of its gods and heroes. At other meetings we have had successful experiments in carbon and hydrogen. Our local badges bear the letters C. L. S. C., with the trident, the symbol of our circle." With this letter the writer sends a bit of experience which is very interesting. "Last summer," she writes, "while visiting the 'Morning Star,' as she lay at the wharf before starting on her noble life work, I found the C. L. S. C. books in the captain's library. I never before so fully realized the bond of sympathy between Chautauquans. Mrs. Bray, the captain's wife, told me that she and her husband belonged to the class of '85. They take the readings together while far out on the deep."

CONNECTICUT has a goodly array of items for the month. NORWICH sends us several of its capital programs; peculiarly attractive is the one for Milton's Day. —BRISTOL reports a circle of twenty-four members, organized in October last, and boasts, most justly, of ten school teachers in its ranks. All the regular work arranged for circles they have been performing, and report most pleasant special meetings on Bryant and Milton Days. —WINSTED has sent us a New Year greeting. A happy circle they are, with their enormous membership of sixty-one members, and "not one lazy one in our ranks," the secretary writes. —At NEW BRITAIN the Milton Day service was very pleasant. The professor of English literature in the State Normal School gave a talk on Milton, and the evening closed with a question match.

The plan of reviewing each work read has been adopted at BRISTOL, R. I. An unusually interesting review was prepared on the "Art of Speech." The epitome which the writer gives of the opening chapter will not only be interesting, it may serve to disentangle some one's ideas on the puzzling growth of English:

With Chapter first our toil begins,
'Tis like a penance for our sins
To try to read it over.

We read it once, we read it twice,
With close attention read it thrice,
Its meaning to discover.

We find, at last, that English speech
Through long succeeding years, doth reach
Back to primeval ages.

From Aryan root it sprang at first—
How long ago, tell us who durst—
And grew by easy stages.

Teutonic trunk and German branch
And Saxon twig grew strong and stanch,
And Norman foliage crowned it;
From Latin grafts it gained new strength
And from Greek scions, too, at length
Grew thrifty leaves around it.

The fruits upon the wondrous tree,
If we should test, we soon should see
Have many foreign flavors.

From Spanish, Dutch, and Portuguese,
Italian, Indian, and Chinese,
Have they derived their savors.

The "Knowledge Seekers," of JAMESTOWN, R. I., form a new circle. Until this year they were a branch of the local circle in NEWPORT, but as six members were added they have formed a circle of their own. —"Pawcatuck" local circle, of the '88 class, C. L. S. C., was organized September 23, 1884, in the village of CAROLINA, a small manufacturing place in southern Rhode Island. The circle has now twenty-four members and meets weekly. Considering the fact that there are only about 375 inhabitants in the place, in all, and that fully one half of this number are mill operatives, the size of the circle is remarkable. The members are all thoroughly interested in the work, and are taking hold of it in a very commendable manner.

From all directions throughout NEW YORK STATE good news of growing circles reaches us. Away up north, in JEFFERSON COUNTY, in the village of ADAMS, there has been organized "a real live C. L. S. C." It is modeled on the broad Chautauquan platform, and has three churches represented in its officers. The program of their Bryant Memorial Day exercises was a model of happily chosen selections, and we learn from the columns of their local paper that it was as happily rendered. —A very profitable plan of assigning subjects is followed at KINGSTON, N. Y., in their circle of seven members. Each member is given, at the beginning of the year, a subject

from the C. L. S. C. readings, to which he devotes his entire attention; thus our correspondent writes that during last year she furnished outlines and questions upon the subject of "Art," and that this year her theme is "Kitchen Science and Art." We like the plan. —In the pleasant town of MOUNT KISCO, not far from New York City, there is a circle which dates back to a public meeting in the interests of the C. L. S. C. held by one of the pastors of the town, in the fall of 1882. A thriving circle of the class of 1886 still exists there. Their plan of work is very comprehensive, including Chautauqua music, general discussions, essays and social observance of the special days. —The ITHACA, N. Y., C. L. S. C. has a membership of forty-six of the classes of '85, '86, '87 and '88. The meetings, held bi-monthly, are full of life and interest. They observe memorial days generally. One of their most active members has moved to CAZENOVIA, N. Y., Mrs. Rev. H. F. Spencer, vice president. She writes: "Our circle, here, is in embryo—think how prosy to come down to a circle of three or four." —The NEWFIELD circle of fifteen members was organized last fall, and held their meetings every Friday evening. Their president, the Rev. W. H. Rogers, is a graduate of the class of '82. —In an interesting letter from the president of a circle at BINGHAMTON, N. Y., we have found some very good hints. He says: "Here in Binghamton our circle numbers twenty. We call ourselves the 'F. F. F.' circle, from our motto: 'Fortiter, fideliter, feliciter'—bravely, faithfully, successfully. Two things our programs all include: First, devotional exercises, remembering that 'we study the Word' as well as 'the works of God.' We use the Chautauqua hymns, all singing together and greatly enjoy it. Secondly, roll call. This is one of our most interesting exercises. We respond by quotations from one or more authors, specially designated for the evening, and keep a record of every quotation given. In this way we are compiling what promises to be a very interesting book of choice quotations. Our members are very much in earnest, and every meeting finds them all present." —The history of one of the circles at OLEAN, N. Y., has been sent us by its secretary: "The 'Whitney' circle (Baptist) was so named in honor of the venerable Dr. Whitney, one of the fathers of the First Baptist Church. This circle was organized in the fall of 1883, with a membership of thirty. This fall we have reorganized, with a membership that bids fair to double that of last year. Each member, in alphabetical order, takes part in the exercises, and are nearly all active workers. Our meetings open with the 'Chautauqua Songs,' followed by the roll call, each member answering with an apt quotation from the readings. Our program then consists of a drill on subjects gone over in the readings for the past two weeks. Two essays, on subjects in harmony with the readings, are read each evening. We also have interesting scientific experiments conducted by Dr. S. J. Mudge, a scientist of this city. We have introduced a novel feature called the 'Tug of War,' in which sides are chosen in spelling-down style, and questions asked on a book which has been completed. Guesses at the Greek alphabet and Greek words are also features of our programs. We also observe some of the memorial days. Last summer our superintendent, the Rev. MacClymont, secured Chancellor Vincent to lecture for us. We invited the M. E. circle, and had a splendid lecture. Taken altogether, we may say our circle is in a prosperous and flourishing condition."

The KEYSTONE STATE is in no way behind New England and its EMPIRE neighbor this month in reports. From CONNELSVILLE, on the banks of the Youghiogheny, comes a hearty greeting to all C. L. S. C. classmates. It is from the sturdy "Spartans," of the class of '88. The circle, organized on Opening Day, numbered at its start twenty-four members. The "Athenian" circle of '86 and the "Pansy" circle of '87 proposed a consolidation of forces; so large was the circle that a public meeting place was necessary. The best talent of the city is in the circle, and to belong to its rank is a good recom-

mentation wherever the circle is known.——At MOUNT PLEASANT, PA., a circle was formed in October consisting of fifty-one members, all but four of which belong to the class of '88. They promise us a full report when fairly started in their work.

——A friend at VERONA, PA., writes: "Our name is the 'Verona Resolutes,' our age two months, our number fifteen. We owe our existence to the fact that three of our new members attended Chautauqua Lake Assembly, and one Mountain Lake Park Assembly, where they caught the C. L. S. C. fever, and upon returning home spread the disease until fifteen are found upon the fever list. We are enjoying it, though, and hope our recovery will be slow, if recovery means loss of interest."——WEST PHILADELPHIA has a new circle—the "Parsonage" circle. They number six and promise to try to increase their list. No doubt their efforts will succeed, the present circle being due to the efforts of three members who last year read alone.——The *Elizabeth Herald*, of ELIZABETH, PA., contained recently the following pleasant notice of the circle in that town: "CHAUTAUQUA CIRCLE.—This flourishing institution is pursuing a course of study and research and enjoying an exchange of ideas, which is a veritable revealing in intellectual and social pleasures, unknown to many of the community whose congenial tastes and capabilities would, if properly directed and cultured, lead them to a sharing of these delights, so far above the frivolities too common to young life. For instance, at the regular meeting of this week, in addition to the regular quiz and discussion of the set topics, the Milton Memorial Day was observed with services of an appropriate nature. The evening was a most pleasant one throughout, and after the regular program was concluded the members, loth to leave, remained, singing and talking in pleasant, informal fashion, for some time."——We are pleased to notice here, a kindly compliment to the president of the flourishing circle of thirty at WASHINGTON, Professor Lyon, of Washington and Jefferson College. Our friend says of him: "In our studies in chemistry, etc., we have the benefit of his knowledge and skill, and obliging disposition, for he always carries from the college to our rooms the apparatus needed for explanation and experiment." This circle held a "sociable" on the evening of December 11th, each member inviting a friend. It was an enjoyable affair and may be the means of adding members.——In kind remembrance of Mary Vincent, the mother of Chancellor Vincent, the members of the C. L. S. C. at PETERSBURG, PA. have named their circle the "Mary Vincent" circle—a peculiarly fitting tribute, Mrs. Vincent having been well known and deeply honored by many Chautauquans in that vicinity.

The CINCINNATI, OHIO, members of the S. H. G. held their yearly reception to the new class, in the pleasant parlor of the First Presbyterian Church, in October. The "Irrepressibles" were right royally received. The president of the society, Mr. J. G. O'Connell, welcomed the class into the society. The following were the toasts, to which hearty responses were given: "The Class of '82;" "Class of '83;" "Class of '84;" "The Founder of the C. L. S. C.—Chancellor J. H. Vincent;" "Chautauqua, the Mecca of the C. L. S. C.;" "Cincinnati Circles;" "Chautauqua Music." The musical part of the program was unusually fine. The collation was a part of the program in which every one present took part. The following are the officers for the ensuing year: President, Mr. J. G. O'Connell, '82; vice-presidents: Class of '82, Mrs. M. J. Pyle; class of '83, Mrs. I. W. Joyce; class of '84, Miss Sarah Trotter; recording secretary, Miss Julia Kolbe; corresponding secretary, Mr. M. S. Turill; treasurer, Miss Selina Wood. The society separated brimful of enthusiasm for the success of the C. L. S. C. Bryant's Day was celebrated by the Cincinnati circles at the Third Presbyterian Church. Mr. S. Logan presided. Among the excellent things on the program were an essay on W. C. Bryant, by Mr. J. A. Johnson, a piano solo by Miss Belle Burnham, and a recitation, "Waiting by the Gate," by Miss Nellie Allan. A union

vesper service was held by the circles at Grace M. P. Church, on the Special Sunday, November 9th. The service was conducted by the Rev. Mr. Spohr, of Grace Church, and Dr. Ridgeway, of Mount Auburn, gave a very fine address upon "Praise." This being the "Greek" year in the C. L. S. C. course, the various circles have added to their names that letter of the Greek alphabet which will indicate their rank in order of organization.——The local circle of MOUNT PLEASANT, OHIO, came into existence in October of 1883. The circle has the usual officers, and meets twice a month at the homes of the members. The enrollment is nineteen, with a large average attendance. They have local talent enlisted, and the meetings are instructive and interesting. The work of 1883 and 1884 was thoroughly accomplished.

One new circle enters the list this month from FRIENDSWOOD, IND. It is formed of twelve members—enthusiastic and brave they must be, for they report themselves as living in the country several miles apart. Not only are they overcoming the difficulty of regular meetings under these circumstances, they are contemplating enlisting others in their work.——Another zealous INDIANA circle is at CORYDON. It is a year old, and believes itself to have done better work than any other circle in the country, an assertion that their method warrants, for they have adopted the novel plan of a C. L. S. C. school, where one member is appointed to hear the lesson and every other comes prepared to recite. Our Corydon friends gave a delightful Milton reception to over thirty guests.——The C. L. S. C. local circle of FORT WAYNE began its fifth year's work on Garfield Day—officers were elected, and seventeen new members added. The subjects under consideration are conducted in a conversational manner. One evening was devoted to chemistry, with highly interesting and successful experiments given by the leader, who is professor of science at the M. E. College. They have held one "Sunday Evening Vesper Service," which proved such an inspiration that they purpose having more. "At the age of five years," they write, "we are truly 'Irrepressible,' 'Invincible,' and as firm and steady as old Plymouth Rock itself." Altogether "we are a live and enthusiastic circle, possessed with the true 'Chautauqua Idea.'"

A letter received from a lady well known to readers of THE CHAUTAUQUAN, Mrs. E. J. Bugbee, says of a circle lately started at EVANSTON, ILL.: "I am happy to report from this glorious Athens of the West a flourishing circle of the C. L. S. C., organized on the first Monday evening in November, and numbering now between forty and fifty members. We have started out with an enthusiasm which we hope will not abate, and indeed we do not expect it to do so under our present fortunate leadership. We have for president Mr. Weeden A. Sawyer, of this place. He presides with dignity and ease, and carries forward the business of the circle with promptness and dispatch. We are also happy in our instructor, the Rev. F. Clatworthy, pastor of the Baptist church of Evanston, who shows wonderful adaptation for this work, and is heartily in sympathy with the Chautauqua Idea, and endeavors closely to follow out the plan for local circles."——At HINSDALE, ILL., a circle was organized in the fall of 1882. The circle was conducted in a very informal manner, having but one officer—secretary—"each member taking her turn as leader, and our exercises were merely the discussions of the past week's reading. In the fall of 1883 we again organized, this time admitting gentlemen, electing a president and secretary, and taking to ourselves a name, 'The Alpha Chautauqua Circle.' Our membership increased to eighteen. Meeting every Monday evening, our exercises were the same as during the preceding year. We celebrated three of the memorial days, which proved not only pleasant and interesting, but very instructive. This last fall our Chautauquans were so enthusiastic that the first meeting was called for September 4th. We reorganized with only nine members; since then have admitted two more. If it can be possible, our work this year seems more interesting

than ever. We continue to meet weekly, and have now decided to take one text-book, or one month's reading in *THE CHAUTAUQUAN* at a time, finishing one subject before taking up another; thinking thereby to obtain a better understanding of the same. Shall also use the questions and answers in *THE CHAUTAUQUAN*, said lessons to be conducted the same as a spelling match. The members respond to the roll call with appropriate quotations, thus far from Greek authors. We have been too busy to observe the memorial days this year, otherwise than by quotations from the author in question. Two of our circle are members of the 'Pansy' class. One of our number graduated last year, who is now an honorary member of the local circle, acting as critic; and we shall have one graduate this year."

A genuine proof of good work is this bit of experience from *TECUMSEH, MICH.*: "At the beginning of this year," the president writes, "we members of '86 reviewed thoroughly our Greek history for the benefit of those of our circle belonging to the classes of '87 and '88. We were highly gratified with the proficiency of the class of '86. How well we remember two years ago the despondency of many of the members at the hard Greek words, and now they pronounce them with ease and fluency. Any one would have been convinced of the benefits of the C. L. S. C. who could have listened to those reviews of Greek history."—The Bryant memorial was very pleasantly observed by the local circle of *ESCANABA, MICH.* Mrs. W. H. Tibbals, '86, invited the members to dinner at 6 o'clock. Nine of the members were present. After the repast, at which each member present received as a souvenir a pallet painted by the hostess, the literary feast was enjoyed. Select reading, "Early Life of the Author;" selection, "The Rivulet;" selection, "The Autumn Woods;" essay, Bryant and his Contemporaries; selection, "The Planting of the Apple Tree;" selection, "The Crowded Street;" essay, Bryant, the Poet; analytical study of the "West Wind;" questions prepared by the president.

Sad news and a beautiful tribute to the C. L. S. C. come to us from *WAUPAN, WIS.*, whence the secretary writes: "Our C. L. S. C. opens this year with added enthusiasm in its membership, and an increasing number. The Bryant Memorial Day was observed in a fitting manner by sentiments, readings, discussion, and a biographical sketch, all bearing upon the great poet. The selections and topics were in accord with our feelings, as we had just met with our first loss since organizing five years ago, in the death of one of our youngest and brightest members, Mrs. Jennie Weed Hinkley. As we review the life of our beloved sister, we can see a symmetry and beauty of character that needed no further lights and shades. Our studies make us better mothers and housekeepers, better able to take our places in the prayer meeting, better able to guide our children, and to understand the work they do in the school room."—The "Pansy" class of *SPARTA, WIS.*, also sends its greetings to all the members of the People's College. A friend telling the story of the circle says: "Our little Spartan class passed through the first year of its existence without a break in the circle, and profiting by the favorable circumstances, observed among others, Shakspeare Memorial Day with more than the ordinary preparation, closing with a basket picnic, served at the house of one of the members. This year, however, sickness has overtaken two of the members, and one still remains an invalid; nevertheless, our progress has been steady. We have observed Bryant's and Milton's Days by interesting exercises."

The C. L. S. C. is coming well to the front this year in *ST. PAUL, MINN.* The year was begun by a lecture from Dr. Vincent on Monday evening, October 6th, on the "Chautauqua Idea." This aroused the enthusiasm of the old Chautauquans and brought in a large addition of new members. On Thursday evening, October 23d, the "Pioneer" circle was reorganized with nineteen members, which have since become twenty-

five. On Monday evening, November 3d (Bryant Day), the "Canadian American" circle was formed, with ten members. There have been at least four other circles formed, with a membership of about eighty. On the evening of November 27th, Thanksgiving night, the "Pioneer" circle held its regular meeting in the parlors of the First M. E. Church. All the other circles in the city were represented, about eighty persons being present. Among the other visitors they were delighted to welcome Prof. J. L. Corning, of Ocean Grove, N. J., a name well known to all Chautauquans. His address on the C. L. S. C. at Ocean Grove and the Chautauqua University was both instructive and enjoyable. The program was in celebration of both Bryant and Thanksgiving Days, and included essays on Bryant's life and works and the origin of Thanksgiving day, with selections from Bryant's works and Thanksgiving day poems. Altogether the evening was a very pleasant one. They are making arrangements for forming a central circle somewhat after the plan of the Toronto central circle and the Troy circle.

Three new circles are reported this month from *IOWA*. At *WAPELLO* a circle of five members; at *PARKERSBURG* one of nine members; and at *ELVIRA*, one of ten. Each reports the work as a delightful revelation, and expresses the hope that they may be able to largely increase their numbers.—In the fall of 1883 a circle was organized in *MISSOURI VALLEY, IOWA*. It consisted of some fifteen members, some of whom, for want of time, failed to do the reading. During the past year a number of the members left the town, one of whom—President Sabine—graduated in the class of 1884. Though the class is scattered, several are doing the reading.

We are always particularly glad to hear from the *BLUE GRASS STATE*, perhaps because our friends there have not sent us frequent reports. This month a friend writes of the circle at *HARDENSBURG*: "The C. L. S. C. of this place is prosecuting its work with unabating energy and zeal. We organized early in September, with eighteen members, that we might be entirely ready for Opening Day. However, there was so much severe illness in our town, and especially among some of the friends of our circle, that it was late in the Circle year before we did anything more toward having a meeting. When at last through the Father's providence we were permitted to meet again, we found that nearly every member had 'read up' to date. We meet on Tuesday evening of each week and carry out the program as furnished for each week in *THE CHAUTAUQUAN*. We keep each memorial day."

Another Southern state to report is *LOUISIANA*. From *LAKE PROVIDENCE* this letter comes: "We have twenty-two members between fifteen and twenty-one years old. We meet once a week; at roll call each answers by reciting, 'We study the Word and works of God,' 'Let us keep our Heavenly Father in the midst,' 'Never be discouraged.' We assign lessons from the C. L. S. C. course for each week as given by *THE CHAUTAUQUAN*. In our class the member who is most attentive, whose conduct is best, who learns the lessons recited most thoroughly, is made president of the class. The places of vice president, secretary, etc., are filled in this way. The lessons which have been memorized by particular members, are learned at their recital by the other members who were not appointed to learn these lessons. In this way the work is done thoroughly, and for hours the interest and enthusiasm do not cool; however, we change from one study to another to prevent any from becoming monotonous. Nineteen members of our circle are college students, but for the most of them this will be their last year at school; so we are trying to fill them with the Chautauqua spirit of learning, morality, truth and Christian worth, that it may linger with them and develop them through all the future into strong and true, noble and pure womanhood and manhood. Having established this circle among the young, we are now working to originate one among the grown. We talk of it a great deal in our social

life; have induced eight to become members of the C. L. S. C., and hope to largely increase the numbers."

SPRINGFIELD, MISSOURI, sends the following interesting history: "In October, 1883, a wave of Chautauqua enthusiasm reached our beautiful city of the Ozarks. Through the influence of two or three energetic ladies, it resulted in the organization of the 'Queen City' circle of the C. L. S. C. The circle began with a membership of fifteen ladies, representing eight religious denominations. Regular meetings were held once a week, all the memorial days kept, and the year's work finished in June. In October, 1884, our circle was reorganized with the same officers. Our members returned full of enthusiasm and ready for work. On Opening Day we endeavored to lay before our new members and visitors—having opened our doors to all interested—the object, the magnitude and the blessing of the 'Chautauqua Idea.' Those interested, and others to whom the 'Idea' was entirely new caught the enthusiasm, and many applications for membership were presented from both gentlemen and ladies. As the 'Queen City' circle is a woman's circle exclusively, holding its meetings in the afternoon, it was thought best to organize another circle, to which both ladies and gentlemen could be admitted. On Bryant's Day the new circle was formed, with a membership of thirty-one. Their meetings will be held on Tuesday evening of each week. It is the intention of the two circles to work together as closely as possible. The 'Queen City' circle meets once a week in a pleasant parlor, which we owe to the courtesy of one of our members. We study the readings for the week thoroughly. Topics are assigned by our instruction committee a week in advance for special study, greater research and more thought being thus brought to bear upon the lesson. Criticism upon pronunciation, inaccuracies of speech, etc., is unsparingly given to all. We are trying to make thorough study of our text-book on 'Parliamentary Practice,' and endeavor to observe all the rules of a deliberative body. Our work is both profitable and delightful, and I think it safe to say that our circle can never languish. Already the '87s are living in joyful anticipation of the day when they will be permitted to pass beneath the Arches at Chautauqua."—A word also comes from KANSAS CITY. There are six circles there, the oldest of which is the "Kansas City" circle, whose interest was so great that the weekly meetings were kept up during last summer, without any vacation. October 1st, they reorganized, with a membership of twenty-five. Two graduates are reading with this circle this year.

A pleasant account of work done in the interest of the C. L. S. C. has reached our table from HIWATHA, KANSAS. A graduate of the class of '84 it comes from: "I have talked C. L. S. C. to my friends until I have declared that it will soon be necessary for me to get a new tongue. I went to our editor to-day and asked his assistance in spreading the work. He has kindly consented to print whatever we wish. There are many things in THE CHAUTAUQUAN that would enlighten the people concerning the C. L. S. C.—what it is, and what it is

doing—but the very ones who most need this information do not take THE CHAUTAUQUAN. By the assistance of our editor we can bring this knowledge to the people. I tell my friends that I can not help being enthusiastic on this subject, because I am an 'Irrepressible.' A 'Pioneer' and an 'Invincible' moved to our town this fall. Beside these we have a few 'Progressives,' 'Pansies,' and 'Plymouth Rocks.' We meet in one of the offices in the court house for our regular meetings—it being a more central point for all—but I invited the circle to my home for a late meeting. I wished to show them the growth of the Persian empire and Alexander's dominions as pictured on Adams's 'Synchronological Chart.' I bought one this summer at Chautauqua. Since my return I made an easel for the chart of hard pine, open-mortised four cross-pieces, on two of which I fastened the chart, and chamfered the edges. The boards were 'in the rough' when I took them, but I smoothed them, sand-papered and oiled them, then blackened the chamfered edges and varnished the easel. Several carpenters have examined my work and all say my joining is perfect and the work well done, and yet I never handled tools until I went to Chautauqua last summer and took instructions."—A new circle has been organized at HARTFORD, KANSAS. It consists of seventeen members, representing a variety of professions and employments. The work has proven pleasant and profitable to them thus far.

Right glad we are to hear from NEBRASKA. A breezy letter comes from the circle at YORK, in which the writer tells us: "We have twenty-four members. We feel quite encouraged when we remember that we began last year with only four. Nearly every meeting adds a new name to our roll. Our members are all enthusiastic and in earnest, preferring to let anything else go rather than miss one 'C. L. S. C.' I really think nothing less than a 'Nebraska blizzard' or cyclone would keep some of our members away. We pursued the Chautauqua plan of questions and answers last year very successfully, and are proceeding in the same way this year, although our programs vary according to the option of the leader. Each member leads in the order his name stands on the secretary's roll. In this way the timid ones of our circle are brought out. We usually have written questions on the readings in THE CHAUTAUQUAN; they are either handed to the secretary to be read, or exchanged. We are fortunate in having a professor of our college as a member, and just now he is making the study of chemistry very interesting and pleasant. We certainly do appreciate our C. L. S. C."

WYOMING TERRITORY is the western limit of our circle travels for February. At CHEYENNE, the "J. L. Taylor" circle organized in 1883 has reorganized with a membership of twelve. The secretary writes: "While we are all young people, having many daily duties and cares, our interest in Chautauqua steadily increases, as we feel it broadens our outlook over the world, and draws us nearer and nearer to our ideal of a higher life. We hope to be able to report much good work done in the future—as we feel that we can not stop with only moderate endeavors."

THE C. L. S. C. CLASSES.

CLASS OF 1885.

"Press on, reaching after those things which are before."

OFFICERS.

President—J. B. Underwood, Meriden, Conn.

Vice President—C. M. Nichols, Springfield, Ohio.

Treasurer—Miss Carrie Hart, Aurora, Ind.

Secretary—Miss M. M. Canfield, Washington, D. C.

Executive Committee—Officers of the class.

Class badges may be procured of either President or Treasurer.

The badges for '85, phoenix-like, have risen from their ashes and can now be furnished promptly.

President Underwood would be glad if circles composed of members of the Class of '85 would inform him of their existence and send name of president and secretary, that he may visit them when possible.

A Canadian classmate writes: "I am prosecuting my studies in connection with the C. L. S. C. all alone in a remote corner of our country, and find my greatest pleasure in holding communion with the good and great of the present and past ages. I am well pleased with the motto for our class and hope to be among those who verify its appropriateness by passing through the Gates next summer at Chautauqua."

One member of '85 writes: "Having just read the December column of '85 in THE CHAUTAUQUAN, have concluded to show my enthusiasm by sending for our colors." We can all say amen to this: "Please place my name on the roll of the Invincibles, and may God for dear Jesus' sake help us all to 'Press on, reaching after those things which are before.'"

Another says: "Although I was nearly fifty years of age when I commenced study in this way, yet am greatly interested and love it more and more. I hope to 'press on, reaching after those things which are before,' until I can stand in the immediate presence of Him whom my soul loveth."

From Kentucky comes this testimony: "I am hoping to be able, literally, to 'pass through the Gates' next August and receive from Chancellor Vincent my diploma. I was at Chautauqua in '83, and will not be content till I go again. My interest and enthusiasm increase as the four years draw to a close. During this time I have pursued my studies alone, having failed entirely to form even a 'straight line' in my neighborhood, five miles from Versailles. Although I would doubtless have enjoyed being connected with a circle, I know that studying the course, even alone, has very greatly benefited me. One of these benefits, and by no means the least, has been the increasing and strengthening of my taste for solid reading."

NEW YORK.—I have often wished that I could express my gratitude for, and appreciation of, my C. L. S. C. studies and associations, but when I attempt it my list of adjectives seems all too meager and inadequate. Since taking up the course, life and all that pertains to it assume a different aspect. I have gained an outlook which gives life a charm and attractiveness of which I had never dreamed. I had passed my forty-fifth year when I comprehended the C. L. S. C. plan sufficiently to see that it was for such illiterate people as I. The benefits I have received are past computation.

Our Class Memorial to our loved alma mater must not be forgotten. We want to prepare for a memorial, a present worthy our name and aim. Fifty-five (55) names have up to this time been sent to the treasurer, with contributions to the class fund (some sending more than the amount requested). That is but a small beginning of the hundreds to hear from.

CLASS OF '86.

"We study for light, to bless with light."

CLASS ORGANIZATION.

President—The Rev. B. P. Snow, Biddeford, Maine.

Vice Presidents—The Rev. J. C. Whitley, Salisbury, Maryland; Mr. L. F. Houghton, Peoria, Illinois; Mr. Walter Y. Morgan, Cleveland, Ohio; Mrs. Delia Browne, Louisville, Kentucky; Miss Florence Finch, Palestine, Texas.

Secretary—The Rev. W. L. Austin, New Albany, Ind.

The officers of '86 send greeting to their classmates and co-workers.

The new class badge will soon be ready to send out. The color of the badge remains the same, but the class emblem and motto will be added.

From Colorado—Durango—comes this encouraging bit of class news: "We have eleven members in our class and are pursuing our studies this winter with unabated interest. Belonging to the class of '86, we mean to be true to the name 'Progressives.' We hold our meetings every Monday evening, and follow the program laid out in THE CHAUTAUQUAN. There seems to be a growing interest in the Chautauqua work, and we hope to have another class organized in our little town before many months. The members of the present class are busy workers, teachers, mothers and housekeepers, but they have continued the course with increasing interest to this the third year, and purpose finishing the full course."

CLASS OF 1887.—"THE PANSIES."

"Neglect not the gift that is in thee."

OFFICERS.

President—The Rev. Frank Russell, Mansfield, Ohio.

Western Secretary—K. A. Burnell, Esq., Chicago, Ill.

Eastern Secretary—J. A. Steven, M.D., Hartford, Conn.

Treasurer—Either Secretary, from either of whom badges may be procured.

Executive Committee—The officers of the class.

Class paper may be procured from Mr. Henry Hart, Atlanta, Ga.

The Canadian Pansies are doing good work in the promotion of the Chautauqua Idea.

The leaves swung lazily and slow,
The wind hummed low its reverie,
Chautauqua bells with loving chime
Pealed forth their sweetest melody.

Their quaint, weird music rolling on,
Mingling with heaven's azure ray,
Enwrapped the earth with bright, new joy;
It was our "Pansies'" natal day.

Remembrance fond brings back the hour
When on our breast the pansy blue
We placed, with earnest, fervent prayer
That to its trust we might be true.

Again, again, and yet again,
Our widening circle grew apace;
And pansies bloomed on every side;
North, South and West each claimed a place.

And now a year with hurried tread,
Has paced its tiny cycle round,
Girdled with moments richly spent
In wanderings on classic ground.

Methinks we scarce could well have crowned
The year ago with richer gems
Than these bright visions of the past,
Tho' culled from monarch's diadems.

A goodly company our band—
Twice seven thousand now we claim;
And purpose with a royal love
Thro' every land to spread its fame.

Tinted is the horizon's rim
With wisdom's deep, ethereal blue,
Yet all may reach its shining goal,
If firm their trust and true.

E'en though the path may rugged be,
And lengthening shadows bar the way,
Onward we'll press with firmer zeal,
Knowing success shall crown the day.

The New England Branch of the Pansy class held its reunion November 28th in the People's Church in Boston. The first hour, from one to two p. m., was spent in social enjoyment. Prof. Sherwin then introduced himself in one of his characteristic speeches and concluded by presenting the New England president, the Rev. F. M. Gardner. He was unknown to many of the members, as he was elected on the last day of the Framingham Assembly, when many of the class had gone home. The president made an appropriate and pleasing address. The secretary, Miss Corey, then read her report. The pupils of the Boston Conservatory of Music, under the direction of Prof. Sherwin, gave a delightful musical entertainment. At the close of the musical program the Rev. J. W. Hamilton, pastor of the church, addressed the class in a very happy and

interesting manner. A class poem was read by Miss Nel Robinson, of Lowell, Mass., which finds its place in this Pansy column this month. After some business the meeting was closed by singing a Chautauqua song. Nearly one hundred and fifty were present at this meeting. During the session the secretary called attention to the samples of class paper which had been sent on from Atlanta by direction of the committee appointed at Chautauqua last summer. The samples met the approval of those present.

CLASS OF 1888.—"THE PLYMOUTH ROCKS."

"Let us be seen by our deeds."

CLASS ORGANIZATION.

President—The Rev. A. E. Dunning.

Vice Presidents—Prof. W. N. Ellis, Brooklyn, N. Y.; the Rev. Wm. G. Roberts, Bellevue, Ohio.

Secretary—Miss M. E. Taylor, Cleveland, Ohio.

Treasurer—Miss M. E. Taylor, Cleveland, Ohio.

All items for this column should be sent to the Rev. C. C. McLean, Jacksonville, Florida.

The Class of '88 will undoubtedly increase its numerical strength at the Florida Chautauqua, to be held at Lake De Funiak, February 10th to March 9th, 1885.

Miss Ella Pearsall, the secretary, writes that in October a

C. L. S. C. was organized in Matteawan, New York, taking as its motto, "Labor and Progress."

One from New Haven, Conn., writes objecting to our name, "Plymouth Rock."

Mrs. C. H. Pike, of New Haven, Conn., informs us that at one of their meetings, they made successful experiments in chemistry, before a delighted audience. Speaks well for our '88s.

The Rev. H. L. Brickett, of Linnfield Center, Mass., class '88, was appointed as a committee of one to confer with the granite companies of New England in regard to a base of granite for the proposed new Hall of Philosophy at Chautauqua, and has been successful in having donated one from the best granite, to be highly polished, bearing our name, monogram, motto, and year of our class. It is valued at \$100. We extend to him, in the name of the "Plymouth Rocks," the '88s, more than thanks.

The Rev. Dr. Dunning, of Boston, has consented to deliver the address at our first annual "spread" in August next.

Stationery and badges for '88 may be secured of Henry Hart, Atlanta, Ga.

Good for '88. In the eight or ten circles found in St. Paul, Minn., about four fifths of the members are of the class of '88.

QUESTIONS AND ANSWERS.

QUESTIONS AND ANSWERS ON "COLLEGE GREEK COURSE IN ENGLISH," "CHEMISTRY," AND "HOW TO HELP THE POOR."

BY A. M. MARTIN,
General Secretary C. L. S. C.

L.—TWENTY-FIVE QUESTIONS AND ANSWERS ON "COLLEGE GREEK COURSE IN ENGLISH"—FROM PAGE 83 TO PAGE 187.

1. Q. Who is foremost among Greek philosophers? A. Socrates.

2. Q. Who is foremost of Greek philosophical writers? A. Plato.

3. Q. What four works have been the fruit, direct or indirect, of Plato's "Republic"? A. Cicero's "De Republica," St. Augustine's "City of God," Sir Thomas More's "Utopia," and Bacon's "New Atlantis."

4. Q. In any just representation of Plato, who could not but be a very conspicuous figure? A. Socrates.

5. Q. In the first extract given from Plato's "Republic," what does the speaker, Glaucon, undertake to set forth for Socrates to overthrow? A. A notion which he avers to be current and accepted among men, that injustice is better policy than justice.

6. Q. From the discussion of the nature of justice and injustice, to what does Plato make a very unexpected passage? A. To that form of discussion which has given its name to the "Republic"—the ideal state.

7. Q. Who has recently made a scholarly and adequate translation of Plato's entire works into English? A. Mr. Jowett.

8. Q. How is the so-styled "Platonic love" defined in the "Republic"? A. "A friend should use no other familiarity to his love than a father would use to his son, and this only for a virtuous end, and he must first have the other's consent."

9. Q. What was the "Socratic dæmon" to which Plato alludes in his "Republic"? A. A benign and beneficent influence—a kind of divinity within him that governed the conduct of Socrates.

10. Q. How is the Timæus of Plato described? A. As of

all the writings of Plato the most obscure and most repulsive to modern readers, while the most influential of all over the ancient and mediæval world.

11. Q. What are some of the other best known works of Plato? A. "The Laws," the "Symposium," the "Phædrus," the "Gorgias," and the "Parmenides."

12. Q. What is the name of the dialogue in which Plato tells of the end of Socrates? A. The "Phædo."

13. Q. What was the sentence of antiquity in regard to Plato? A. That Zeus, if he had spoken Greek, would have spoken it like Plato.

14. Q. Who was a distinguished pupil of Plato? A. Aristotle, and in influence on human thought he equaled and rivaled his master.

15. Q. How does our author state the difference between ancient tragedy and modern, in a single antithetical sentence? A. Modern tragedy presents real life idealized; ancient tragedy presents an ideal life realized.

16. Q. What did Greek tragedy have for its chief purpose? A. To teach.

17. Q. How were Greek tragedies represented? A. By daylight, in the open air, before assemblages that numbered their tens of thousands of spectators.

18. Q. What is said of the dress of the actors? A. The actors wore masks on their faces and buskins on their feet. Beside this they wore a kind of wig designed to make them look taller, and dressed with padding to make them look larger.

19. Q. Who were the three masters of Greek tragedy? A. Æschylus, Sophocles and Euripides.

20. Q. When and where was Æschylus born? A. In 525 B. C., in an Attic village near Athens.

21. Q. In the present volume, from what tragedy of Æschylus are selections presented? A. "Prometheus Bound."

22. Q. Who was Prometheus? A. A mythical being of superhuman rank, who stole fire from heaven and brought it to men. For this offense against Zeus he was condemned to be chained alive to a rocky cliff in the Caucasus.

23. Q. What other great tragic poet was contemporary with Æschylus? A. Sophocles.

24. Q. From what masterpiece of Sophocles are the selections of the present volume made? A. "Œdipus Tyrannus, or Œdipus the King."

25. Q. How is this tragedy considered by, perhaps, the majority of qualified critics? A. To be not only the best work of Sophocles, but the "bright, consummate flower" of all Greek tragedy.

II.—TWENTY-FIVE QUESTIONS AND ANSWERS ON "CHEMISTRY" —FROM BEGINNING OF BOOK TO PAGE 84.

26. Q. Of what does chemistry treat? A. All kinds of material substances.

27. Q. What is said of the number of the various kinds of matter already existing on our earth? A. The number is so great that the various kinds have never been so much as counted, much less described, in any list or volume.

28. Q. Of what are all things known to chemists made up? A. A few simple substances, either existing alone or in richly various combinations.

29. Q. What are called chemical elements, and what compounds? A. The simplest substances when alone are called the chemical elements, or elementary substances; the things resulting when different elements are united are called compounds.

30. Q. What does the two-fold character of chemical study involve? A. First, the examination of elementary substances and their compounds. Second, a consideration of the many general and special laws and forces which determine the various possible combinations.

31. Q. How many elementary substances are there now generally recognized as such? A. Sixty-six.

32. Q. About how many of the elements possess names that are familiar to ordinary readers? A. About one sixth of them.

33. Q. Of what two elementary substances is it probable that three fourths of our globe is composed? A. Of oxygen one half, and of silicon one fourth.

34. Q. What general name is given to most of the elements? A. Metals.

35. Q. What symbol and what weight has each element? A. An atomic symbol and an atomic weight.

36. Q. How is an atom of each elementary substance designated? A. By a symbol, usually the initial letter of the native or Latin name of the substance.

37. Q. What are three properties an elementary substance accepted as a metal should possess? A. It must possess the property of existing in a solid condition; it should possess the metallic luster; and it should possess the power and tendency to readily form a chemical union with oxygen.

38. Q. What are called binary and what ternary compounds? A. Compounds having only two kinds of elements are called binaries. Compounds having three kinds of elements are called ternaries.

39. Q. What four binary compounds are given as examples? A. Hydric chloride, sulphur di-oxide, sulphur tri-oxide, and plumbic oxide.

40. Q. Under what two heads are the principal ternaries grouped? A. Acids and salts.

41. Q. What are the two principal ternary acids used by chemists? A. Nitric acid and sulphuric acid.

42. Q. What is meant by the term atom? A. It is that portion of any kind of matter that is to human beings indivisible in fact.

43. Q. With what invisible, occult power is each atom and each molecule endowed? A. A power called chemical affinity.

44. Q. What are three of the peculiarities of chemical affinity? A. Each kind of atom has its peculiar chemical affinities. Each atom has a certain equivalence or atom-fixing power. Chemical changes produce striking results.

45. Q. What is the most common way of producing hydrogen? A. By bringing together sulphuric acid and zinc.

46. Q. What are some of the properties of hydrogen as a gas? A. It is colorless, odorless, tasteless, and, bulk for bulk, it is the lightest substance known in nature.

47. Q. What is the most interesting chemical property of hydrogen? A. Its power to unite with oxygen.

48. Q. What is said of the uses to which hydrogen may be put? A. As an elementary gas it finds but few applications in the arts.

49. Q. For what standards is hydrogen used by chemists? A. As the standard of equivalence or atom-fixing power; the standard of atomic weight, and the standard of density for gases.

50. Q. What did the remarkable lightness of hydrogen early suggest? A. The fitness of that gas for the inflation of balloons.

III.—TWENTY-FIVE QUESTIONS AND ANSWERS ON "HOW TO HELP THE POOR."

51. Q. What is the aim of the book, "How to Help the Poor?" A. To give a few suggestions to visitors among the poor, and to lead all such visitors to attend the conferences which are now held weekly in almost every district of our large cities.

52. Q. What is one of the most direct commands in the Christian Scripture? A. "Give to him that asketh."

53. Q. Why need there be no beggars in our American cities? A. Labor is wanted everywhere, especially educated labor; nowhere is the supply of the latter equal to the demand.

54. Q. What do the people crying continually "give to us" really need? A. A chance to learn how to work, and sufficient protection in the meantime from the evils of idleness, drunkenness and vice.

55. Q. What is "out-door relief?" A. It is the giving of money (or its equivalent) which is raised by taxing the people, if the applicants come under certain rules and laws.

56. Q. To what conclusion does Mr. Seth Low, of Brooklyn, N. Y., come in regard to "out-door relief?" A. That out-door relief, in the United States as elsewhere, tends inevitably and surely to increase pauperism.

57. Q. Of what three parts is the conference of a district composed? A. First, the district committee; second, the representatives of societies and officers; third, the visitors.

58. Q. How does one writer state that the disciplining of our immense poor population must be effected? A. By individual influence; and this power can change it from a mob of paupers and semi-paupers into a body of self-dependent workers.

59. Q. What does not, and what does visiting the poor mean? A. Visiting the poor does not mean entering the room of a person hitherto unknown to make a call. It means that we are invited to visit a miserable abode for the purpose, first, of discovering the cause of that misery.

60. Q. What does Dr. Tuckerman say of every child who is a beggar? A. Every child who is a beggar, almost without exception, will become a vagrant and probably a thief.

61. Q. What is the only just reason for taking children from their natural homes? A. To lift them out of moral poverty. Material poverty, alone, is not sufficient cause.

62. Q. What do the statistics of the Labor Bureau show in regard to homeless young women in Boston? A. That there are twenty thousand homeless young women in Boston whose wages average only four dollars per week.

63. Q. What is the first suggestion made for the better care of the aged? A. By patient study of each individual, and by ingenious experiment of one plan after another, some fit occu-

pation can often be found which shall bring both happiness and profit.

64. Q. When does not private charity do its full part? A. While any other than almshouse cases are allowed to fall into the care of the city authorities.

65. Q. What does experience, as the opportunities for observation widen, induce the writer to believe? A. That every human being can do something if he has a chance, and is intended to fill some gap in the universal plan.

66. Q. What does Edward Denison say of the crime of begging? A. It does not consist in the mere solicitation of alms. The gist of the offense is the intention of preying upon society; and of this intent the asking alms is only evidence—not proof.

67. Q. What is the root of a very large proportion of the suffering of the poor in the cities of America? A. Drunkenness.

68. Q. What is one of the first duties of a visitor in entering a tenement house? A. To use his senses.

69. Q. What knowledge means physical salvation, and thus a better prospect for understanding the spiritual? A. How to make even the smallest home clean and attractive, and to get the largest return from every dollar earned.

70. Q. What is one of the earliest and most important topics which should engage the attention of the visitor? A. That of helping people to save.

71. Q. What drives people into solitude? A. Trouble of any kind, and especially any misfortune which has a tendency to lower a person in the social scale.

72. Q. What is said of many of the poor who most deeply need visitors? A. They are lonely persons, and the fact of finding a friend at last is encouragement to them and the beginning of better times.

73. Q. What is almost the only true help of the worldly sort which it is possible to give the poor? A. To teach them how to use even the small share of goods and talents intrusted to them.

74. Q. What truth has been made clear in regard to the expenditure of money and goods alone? A. That it does not alleviate poverty.

75. Q. What has experience taught differently from the assertions that certain evils can not be helped, and that we may as well let things alone? A. That evils can be helped, and to let things alone is to lend ourselves to wrong.

THE CHAUTAUQUA UNIVERSITY.

CAN LANGUAGE BE TAUGHT BY CORRESPONDENCE?

BY PROF. R. S. HOLMES, A.M.

Can a language be taught by correspondence? Unhesitatingly, yes! Experience, though brief, gives warrant for the answer. The constantly increasing number of advertisements appearing in journals of wide circulation gives evidence that teachers at least believe instruction by this method both possible and profitable. It is in this belief that the only danger to the system lies. Incompetency in this field must fail. It can be hidden by no outward show. No would-be teacher, with text-book and printed question in hand, can parade before a class and *hear a recitation*. Only a teacher, a real teacher, can hope for success in this work, and that must come by methods entirely foreign to the ordinary methods of the class-room. Born a teacher, not made; such must be he who would successfully use the correspondence system in his work of teaching. Such teachers are rare, even in comparison with the multitudes of those who already fill the places in our hundreds of thousands of schools, and still more rare in the ranks of the throng which, filling the avenues leading to them, is expectantly awaiting the constantly occurring vacancies. For this reason we have said that the growing demand for correspondence schools constitutes their principal danger; for persons aware of this demand and allured by the hope of swelling moderate incomes, though they have no peculiar appreciation of the particular requirements demanded to fit one for the work, will yet enter the lists as competitors in this field. The inevitable results must be failure by the teacher, discouragement to honest and earnest students who can find no other means for acquiring education, distrust of the practicability of the system, and discredit for correspondence teachers as a class. To avoid this, to provide only competent instructors, and to arrange and systematize as broad and comprehensive a course of study as is furnished by an institution is one of the purposes of the Chautauqua University. In such a course languages, ancient and modern, must be taught, and must be taught by correspondence, or not at all. But while it will be conceded that instruction by correspondence is possible, in ordinary branches, yet the honest inquirer will ask in view of the peculiarities surrounding the subject of foreign languages, the question which begins this paper: Can a language be

taught by correspondence? Again we answer, unhesitatingly, yes! and in no dubious way, but with a measure of success fully equal to that possible by oral instruction. The question of the time necessary to complete any given topic is not germane to this discussion. Yet in passing, it may be said, that of two persons who should be able to devote their whole time to study, one using oral and the other correspondence methods, we see no reason why the first should have any advantage in point of time required for the completion of any prescribed course of study.

We present four reasons in support of the answer we have so positively given:

FIRST—*The class of students seeking this instruction is more teachable than can be easily found elsewhere.* Its members rank in earnestness and intensity of application with the best of those pursuing post-graduate or special courses in resident and special institutions. They are men already in professional life, physicians, attorneys, pastors, journalists and teachers. They are men who, having long looked wistfully from a distance at our great educational institutions without being able to avail themselves of their advantages, suddenly find excellent educational advantages brought to their very doors and offered on terms which they can easily accept. They are young men and women who during their school days felt the necessity of making the best use of their time, and acquired habits of steady application, of critical study, and of economy in the use of spare moments; but whose school days were limited by unconquerable circumstances to the village academy or high school, or even to the less ambitious country district school. These classes are easier to teach than almost any other, since they are ready to do to the fullest extent the work which alone can make any teaching successful.

SECOND—*More skill is required in the work of preparing and assigning lessons than is ordinarily shown.* The art of assigning lessons should form a part in every scheme of pedagogical instruction. Unfortunately, the methods with which most who have memories of the class room are familiar are worthy subjects for criticism. The recitation hour passes rapidly in question and answer over the technicalities of the

text. The closing moments are sufficient to direct a continuation of the advance reading, a review of previous lessons, and the assignment of certain portions from the grammar. There is no definite direction as to special points to be examined; no provision for particular work in etymology, or analysis, or comparison; no synthetic outline for the next day's thought; no aids to help the student to test his own work or to detect his own errors before the next recitation assembly. Such methods or lack of methods in the correspondence school would surely cause its failure. How to assign lessons becomes here the crucial test of the teacher's power. He must so lay out the work to be done that the pupil whom he has never seen will be stimulated to effort and not grow discouraged; will be led from the world of the known at his feet, into the world of the unknown in which the teacher lives; will be allowed to make no misuse of time in unprofitable study; will be wisely directed in the acquirement of lexical and grammatical knowledge, and will be enabled to test his own work with ever increasing accuracy. Such a teacher can not fail of success in his effort to teach a language by correspondence.

THIRD—*More care is required in the matter of interrogation.* Thorough mastery of the art of interrogation is an essential; almost priceless in any teaching—here it is a *sine qua non*. The presence of teacher and pupil in the class room makes questioning easy; the oral question is quickly given, quickly answered, and many questions may be used to elicit a single truth, or to impress a single lesson. But the correspondence teacher is not so favored. His questions must be so framed that one, or at the most two, shall suffice. Again, the oral teacher through lack of memory and long custom, may allow his questions to become a mere matter of routine, and daily tread the same monotonous round. We speak from memory when we assert of a college class, that it became so familiar with the questions asked during Greek hour in junior year, as to be able to answer the coming question almost before its utterance. This will not do for the correspondence teacher. His questions must be only such as his lesson directions have suggested; they must be committed to paper, in remorseless ink; they are to be subjected to scrutiny; they must not be obscure, or repetitious; and their range must be as wide as his students' knowledge. Such questioning can not fail of success.

FOURTH—*More earnest and thorough study is required of the student.* He has in a certain sense the work of two persons to perform, his own and his teacher's; his own, in that he investigates and acquires as directed; his teacher's, in that he must prove and test that which he has done and is doing, by efforts of memory, by work of comparison, and by strict grammatical rule. He must recite to himself, ask of himself the questions which he must answer, and correct himself before finally his finished work is returned to his teacher for revision.

We think we have made sufficiently plain the possibility of success in teaching a language by correspondence. The reasons seem to us conclusive. That which remains to be said is even more potent. After all thinking, reasoning and objecting is done, after all testimony for or against has been received the established fact remains, successful teaching of languages, ancient and modern, by correspondence alone, has been done within the years just past, is now being done, and will be yet more effectively and widely done with each advancing year.

In support of these statements, which we believe are true, we present a testimonial from an experienced teacher, who has been and is a member of the College of Modern Languages in the Chautauqua University. It is as follows:

"I have been a member of the German class in the Chautauqua Correspondence School of Languages for two years, and I consider this plan of study, including the six weeks' instruction each year at Chautauqua, superior to any other. The method is not only more comprehensive, it also advances the pupil much more rapidly, makes him more thorough, broadens his culture, enables him to become familiar with history, with literature, with art, and better than all, teaches him how to acquire knowledge."

We add two statements of fact which can be verified as proofs of popular opinion regarding correspondence schools:

FIRST—That the Director of the Department of New Testament Greek in the Chautauqua School of Theology has students to the number of almost four hundred who rely for instruction entirely upon correspondence lessons.

SECOND—That the Dean of the Department of Hebrew in the same institution has under instruction by the same methods, in the different enterprises with which he is connected, about seven hundred students. Could there be anything more significant?

EDITOR'S OUTLOOK.

"MINOR MORALS."

The importance of good breeding can not be too diligently insisted upon. But what is good breeding? This is hardly to be understood as synonymous with good manners, though certainly involving them. Nor is it quite the same thing as exemplary or agreeable behavior, though likely to insure it. The latter is entirely the product of constant practice. Good manners, polished behavior, are the fruit of long discipline—perfection herein being reached only when these manners become habitual, natural, instinctive.

True courtesy, meanwhile, involves something deeper than mere manners or motions. It has its seat in the heart—its root in the moral nature. Fundamentally it consists in an inward kindly, neighborly, tender feeling toward every one, an interest in, and a desire to promote everybody's welfare. Genuine courtesy, in a word, is born of love, springs from a benevolent disposition, a brotherly, chivalric impulse.

But what is good breeding? It consists in this inward principle of good will, and the outward *habit* of graceful demeanor combined—it consists in the aforesaid inward gracious impulse, rooted in the heart, and finding natural outward expression, or interpretation, through that disciplined elegance

of deportment of which I have spoken. To the inward impulse, or sentiment, duly awakened, the outward, educated habit naturally, instinctively responds; and we have the deportment, or carriage, of the truly polished or accomplished gentleman or lady.

These twin principles, the inward nurture and the outward culture or training, working together, underlie what in the highest sense is to be understood as good breeding.

The practical value of the accomplishment under consideration can not well be overestimated. How charming, truly, this gentlemanly, lady-like conduct—this kindly, graceful, genial way of carrying one's self socially. True courtesy, verily, is as delightful as a song. More eloquent is it, we may say, than any oratory. It is a fine art. Better still, it is Christian.

Is it not at once a privilege and a duty to promote the pleasure of others? As has just been suggested, how may we more effectually minister to the pleasure of others than by a charming behavior?

By cultivated, agreeable manners, moreover, we immensely enhance our personal influence—our power for good. A person of agreeable manners, by uniformly pleasing, will, natu-

rally, always be popular—have hosts of friends. While, whatever one's worth or attainments, we yet shun his presence if he be disagreeable or offensive in manner or speech; on the other hand, we instinctively covet the society of one who, in any way, delights us.

The irresistible charm of polished manners, even when cultivated solely for commercial purposes, is well illustrated by a remark said to have been made by Mr. Beecher concerning the clerks in the shops of Paris. They were, he said, so polite and engaging in their attentions that his first impression always was that he must have met them somewhere before. And who has not, indeed, under the influence of the benign spirit, the genial and engaging manners, the kindly and obliging offices of the accomplished tradesman, often felt his prejudices give way, his original intentions to purchase nothing yield, and, instead, a purpose gradually spring up in his mind to do just the opposite of what he originally designed?

Nothing can be more evident, therefore, than that this matter of manners and breeding is a no unimportant part of one's education, constituting, truly, a no insignificant part of every true man's character. How greatly, then, does that youth stand in his own light, who, for any cause, neglects his manners. The thoroughly courteous youth, other things equal, will surely win his way to success. Personally agreeable in all his ways, he conciliates opposing prejudices, charms the indifferent, and makes every one he meets his friend. The boorish man, on the contrary, as inevitably blocks his way to fortune by awakening, on the part of those with whom he has to do, only sentiments of aversion and disgust.

Girls, for some reason, seem to take more naturally and kindly to graceful ways, to gentle courtesies, than boys. Young America, we think, is characteristically boorish, if not clownish. The boy of the period manifestly places no adequate value on good manners. Doubtless this matter of breeding—this careful cultivation of a genial and amiable deportment—is sadly neglected in our day. The youth of our day should be taught not only that rudeness and vulgarity never pay; but that while awkwardness is disagreeable and burdensome, the slightest approach to rowdiness is detestable and unpardonable.

Some one has very happily represented good manners as "minor morals." And certain it is that vulgarity and vice are intimately related; that the low, vulgar fellow will ever be found but a few removes from a positively vicious one.

Love, refinement, social cultivation are all closely allied with righteousness; these, always and everywhere, constitute the true gentleman and lady.

THE COUNCILS AT BALTIMORE.

It was a noteworthy fact that two of the three great religious bodies of this country were holding councils in the same city in the last days of 1884. The city of Baltimore enjoys the distinction of being both a Catholic and a Methodist city. The former is the older claimant, since it was founded by English Catholics; but Methodism, also founded by Englishmen, has a Baltimore history which occasioned the centennial conference of last month. It was in Baltimore, Christmas 1784, that a few circuit riders organized the Methodist Episcopal Church. It is doubtless through the effectiveness of that organization that Methodism holds its position as the religious union of the largest population embraced in any one organization in this country. The Catholics are ordinarily reckoned the most numerous, because they count population and Methodists count only members; but taking the former basis as a common measure, the various branches of Methodism are doubtless the most numerous; and it is probable that by the same tests the Baptists outnumber the Catholics. If the Presbyterian bodies could be counted together, and the Lutherans and Congregationalists included, we should have a third great body of Protestants which may possibly outnumber the Catholics.

Two other communions, the Protestant Episcopal and the Unitarian, would be in the first rank of religious influence if we attempted to measure and compare by this test. Taking account of members only, the most difficult problem of religious statistics is to determine whether any religious organization is relatively increasing. The unattached population, and the independent Protestant organizations, have been growing in numbers for a score of years; and the Protestant communions can not count by population without including the same persons in more than one church. It is not surprising that the Catholics most easily make an imposing array in the statistical tables. The precise count is not important in this place. The Catholics and Methodists are large bodies of American Christians, and they have some common features as well as some striking contrasts.

Both communions owe their success (if we take worldly measurement) to their vigorous management and subordination of their clergy for the good of the common cause. A Methodist itinerant and a Catholic priest resemble each other very little, but they are alike in being men who are "sent," and who "obey orders." Their personal choices and well-being are subordinated to a service and devotion. They alike resign at the doors of the temple their rights to serve and please themselves. It may be said that all Christians should do this; but this self-surrender is to the priest and the itinerants *objective* as well as *subjective*. It means that they go where they are sent by a human authority which they identify with the divine will. They are sacrificed to the general good; they suffer that others may rejoice—always under an external and visible authority. Another point of resemblance is the *practical* liberty of laymen in both churches. Theoretically the Catholic and the Methodist laymen are both bound to considerable service and duties. Methodism began in a rigor of religious duties which makes one wonder how John Wesley missed founding a new Catholic order of world-renouncing priests and lay brothers. Catholicism is theoretically even more rigorous. In the progress of this century, both laities have achieved more liberty than is good for them; the priest and the itinerant serve and sacrifice for all. A bright-eyed Methodist editor called attention some years ago to the fact that his church tolerates no heresy in ministers and pays little attention to the doctrinal vagaries of its laymen. It is doubtless true of both Catholics and Methodists; though neither church is prepared to make any admission of the sort or ever will be. The theory in each case calls for sound believing; and it is probably a just judgment which says that liberty is the atmosphere required for the growth of sound faith.

Another point of resemblance between Catholic and Methodist is that both communions have had a great mission to preach to the poor; and that they have preached to such effect that large numbers of their poor have become rich, not so obviously in faith as in worldly goods. We mean not to sneer, but to put our finger on the *objective* reality which lies before us. He is a careless man who fails to see that Methodism and Catholicism have produced industry, thrift, temperance and wealth in classes of people who were miserably poor at the outset. The fact has long been understood of Methodists; a special fact has obscured this large one among Catholics. There has been a steady inflow of poverty from the Old World and the Catholics have received into their communion a very large portion of this poverty. Their needy have been most abundantly recruited and continue to be. But at the same time their poor have grown wealthy all over the land. The Puritan farmer is disappearing in New England and the Irish Catholic is taking his place. Wealthy Catholics abound in all the large cities.

There are many points of contrast between the two communions. We suggest a single one, still looking at externals and not at creeds. While Methodism has for a quarter of a century been one of the most influential factors in politics—

not at all as a machine, but altogether as an influence—Catholicism has during the same period almost lapsed out of sight as a political element. This resulted from the foreign character and training of the majority of the priests and people, and from wise avoidance of occasions of odium by the Catholic prelates. We suggest this contrast without drawing any inferences from it. For the near future, it is safe to predict a change on the Catholic side. Their Baltimore council will, by force of associations which are full of significance, tend to produce change. In Baltimore the Catholic may properly remember his claims to be and live an American of the Americans. That church has had a vast body of foreigners to naturalize; it has done the work under an array of obstacles which seemed too formidable to be overcome. It is a near day when the Americanism of the Catholics of this country will come to the proof of its quality and value. At Baltimore the thoughtful priest must have been moved to remember what claims he has on the country and what claims the country has on him. We shall as a people suffer some bitter trials and humiliations if the Catholics are not to be genuine Americans and ardent patriots. They are too many to be neutral or hostile.

A POOR MAN'S MOTOR.

The labor problem has not yet received a solution. Its central difficulty is to secure to workmen a fair share of the blessings of life. No one supposes that, taking the world together, they do now receive a fair share. In this country, workmen have fared uncommonly well; but there is a belief, resting on some facts, that the actual rewards of labor, as measured in the blessings of life, are rapidly declining, and must go on declining under the existing industrial system. Some theories on the subject are no longer tenable. The workman's theory that capital robs him is not sound. Money, once worth ten per cent., has fallen to three per cent. for perfectly safe loans; when higher interest is paid, it is paid for conducting the business of lending (as in banks) or for risks of the loans. The government can borrow a thousand and more millions at two and one-half to three per cent.—and this shows what a hard time of it capital is having. The risks of manufacturing probably bleed labor; but the bleeding is not in the form of which the workman thinks. It is not profit but loss which drives the lancet in to the hilt. Political economists have shown (and they are entirely unanimous) that the high profits produce a competition which brings down profits. Capital is cheap; large profits can be made only in conditions which are monopolistic.

Our system of industrial exchange has one very weak place, called *credit*. This credit is a hole in the net through which industrial gains are dropped into the bottomless sea; and the system is so fixed upon us that there is no hope of reform in our day. To pay when we buy more and more offends something in our make-up. A wise man proposed that one, two and five dollar bills be abolished, in order that we might circulate, as the French do, a large amount of silver. A member of Congress immediately amended the suggestion thus: "No. Put this silver in the United States Treasury, and let us use 'silver notes.'" We insist upon having even a credit money, and object to "the trouble" of handling coin. This refined and transcendental sentiment, or taste, or æstheticism about coin runs through us. The man who always pays, as well as the sneak who never pays if he can avoid it, says, "Charge it," when he buys goods. Goods are sold by the manufacturer to the jobber on credit; the jobber sells to the wholesale houses on credit; the wholesale dealers sell to retailers on credit; the retailers sell to consumers on credit. It is within the mark to say, that more is lost in these four credit traps than capital gets—much more. It is not, in fact, the capitalist, but the well-dressed and the shabbily-dressed thieves who cheat and rob labor.

At first sight, the reader will wonder how the losses of the

four credits come home to labor. We reply: they are merely the aggregate of the risks incurred in making staple goods—all other risks being insignificant in such manufacturing. The order of things is like this: what the jobber loses the manufacturer loses by the failure of the jobber. The jobber loses what the dealers between him and the consumers lose. Not quite all, perhaps, for the capitals of the dealers must be of some worth; but the consumer has, in the end, to pay all these losses, and the result is an enhanced price. In other words, a bale of goods starts out with a burden of risk which grows as it travels, and adds to the cost of goods so much that the consumer can not buy as much as he needs. The from 250 to 300 or more failures each week tell a part of the workman's trouble; another vast body of his losses does not go to record at all. It is the fifty-cents-on-a-dollar compromise system between wholesalers and retailers.

Workmen ought to get what consumers pay, less three per cent. on capital and about as much more for risk of ordinary kinds and a fair cost of handling goods. We maintain a system of extraordinary risks, called a credit system, which consumes two or three times as much as capital. It is plain that workmen can not get (we write of such staples as cotton cloth) pay for lost goods. Wherever they are lost, the sums lost can not reach labor. We do not enter into the details of this argument; we have suggested reasons for believing that a cash system would stop one of the great leaks of the industrial system.

There are other great wastes in the existing forms of industrial management which, like the credit system, come out of the bones and blood of the workman. We pass them by to suggest that the industrial system has gone wrong, and can never go right, under the empire of steam. Steam is a centralizer. It concentrates industry, and by packing laborers into a small compass *enhances the cost of living* and enlarges the area of losses on sales and of distress in hard times. And to go at once to our solution of the labor problem, we will describe it as decentralization. A writer in *MacMillan's Magazine* suggests that electric motors may prove to be the decentralizing force. Of course, it is not in the power of any material agent to effect great changes except as it coöperates with our inclinations. The expensiveness of steam machinery coöperated with our inclination to congregate in cities. We have congregated there. The larger half of our growth is in towns. The result is dear food, dear rent, pestilential diseases, moral degradation. When we grow sick of the experiment of building a modern Babel, our inclinations may coöperate with a motor energy which is plebeian and democratic. Let us suppose, then, that a workman can make any of the innumerable small articles which have iron or steel for a material. This workman has his bits of machinery and tools in his house. They do not cost more than a carpenter's chest of tools. He has the skill; he has the tools; he wants power. But a neighbor tells him that he can buy in quart or gallon cans stored-up electricity, and by a little contrivance, which may cost fifty cents, he can attach his machinery to this democratic motor and be an independent workman, with all the advantages of machinery. He can make all these iron and steel contrivances in the middle of a prairie and sell them to his neighbors for cheap food and cheap rent. The *divisibility* of electric power may make it the poor man's friend. You can not buy five cents' worth of steam; there is now no reason to doubt that electric power may be sold in five-cent packages if there is a demand for it in such form. There is a vast aggregate of small manufacturing. Of course there are great industries to which our solution would not apply; but if half the laborers of the country could work profitably, each man by himself, in his own house—just as cobblers work—then the strain on the large industries, such as iron and steel making, would be so far reduced that workmen in those branches would probably command, permanently, excellent wages.

This article aims to do nothing more than to open a window of hope. We shall need to change a great deal; but the poor man's motor will probably help us to change. A good many monopolies have grown up because steam favored their growth; others are the fruits of general ignorance. Under the sway of ignorance, the trade-mark becomes a tyrant, a grasping monopolist. For example, there are no patents on sewing machines, but machines of certain firms, wearing a certain trade-mark, command a monopoly price. Any good mechanic can build a good sewing machine for ten dollars. There might be men in every town engaged in supplying the local wants in the matter of sewing machines. No large factories, no heavy transportation bills, no eloquent traveling agents would be needed. There are thousands of things to which the same rule will apply when there is a poor man's motor and such a diffusion of intelligence that the poor man can make, and people will buy, the home-made articles. The empire of the trade-mark will disappear when the motor and the intelligence come along, and both seem to be coming. It will not be necessary—it the motor arrives—to herd people together like cattle, or to transport good, long distances. The workmen will carry their kits of tools to the villages and live independently and cheaply in the midst of their customers. Is this a dream? But why should it not come true?

REFORMED CRIMINALS.

The French government is considering a proposition to restore the custom of deporting criminals. It is remarkable that the practical argument on this subject is decidedly favorable to this system. The argument against it is a sentimental one. The unsettled question about punishments for other than capital offenses is, how to secure the reform of criminals. Under the best managed prisons, reform of a lasting kind is rare. The best management seems to succeed until the prisoner is set at liberty. Then the reformed man finds himself an object of suspicion to orderly people and of special interest and sympathy to the criminal classes. The former will not employ him and the latter will. The result is, in most cases, that he relapses into crime. Perhaps there is some hope that the better classes may improve in their habits; but unless they do, it is well nigh useless to reform criminals in prison. The poor men who come out into an unsympathetic world which does not believe in their reformation, and in which unreformed ex-convicts are numerous enough to keep the general distrust of their class alive, have nothing like a fair chance to begin the world over again. If there were any hope that prisons could be perfected so as to reform all convicts, public prejudice could be broken down; but it is too much to expect that the general public will acquire a habit of distinguishing between good and bad ex-convicts. This is the difficulty for which no device has yet been found which will take it out of the path of humanitarian prison discipline. No faith is more stable than that which, among the public at large, affirms the total depravity of some men; especially of ex-convicts.

Turning to penal colonies, experience is most favorable to the belief that it opens the road to reform. The reports on the British penal colonies are especially cheerful from this point of view. The majority of the criminals sent abroad during three centuries reformed their lives. Australia ought to be the most disorderly country on the globe, if deporting criminals to a

colony could produce a bad society. But notwithstanding the fact that England sent a large criminal population to that colony, Australia is one of the most orderly and respectable of the English dependencies. The only possible explanation is that the official reports are true, and that the convicts did actually reform. If Botany Bay did not reform them, the honest opportunities of that vast island did cooperate with their good purpose and promote their reform. England deported criminals from 1597 to 1867—a period of 270 years. During the War of Independence she suspended deportation and enrolled her convicts in the armies sent to subjugate us. In 1838 more than 100,000 criminals had been sent to Australia. An official report sets forth that in 1850 an enumeration of ex-convicts in Australia accounted for 48,600, and that all of them except an insignificant fraction were living honestly. But it will be said that Australia protested against the continuance of the system. This is not the exact fact. In dealing with the question, the English government threw upon the Australians all the expense of the surveillance of the deported criminals. The colonial government demanded, most righteously that England should pay this bill of expense; but rather than pay it the English Parliament chose to abolish the system of deportation. The colonists did make sentimental objections to receiving convicts, but they did so on the ground that the cost of watching the criminals of England was unjustly thrown upon them. A French writer remarks that in this case, as in the quarrel with us, the money question was allowed to prevail over statesmanship. The British ex-convict is worse off than our own because there are fewer opportunities for men under the reproach of prison service.

The French proposition to resort again to penal colonies, or rather to dumping ship-loads of criminals on new and undeveloped countries, suggests the seriousness of the question. Every French colony will object to receiving the vicious cargoes of humanity; but the objections will lose their violence if the home government shall send a proper proportion of French gold with each cargo. The testimony on the subject seems to show that if the transported men are such as to give signs of real reform, ninety-five per cent. of them will make good citizens. The open country, the new moral scenery, the necessities of that new world, conspire with good resolutions to maintain reformed habits. What shall we do with our reformed prisoners? It is not improbable that in a few years England will imitate France and restore the system of deportation. Why should not we make an experiment? Alaska, at least, might safely be used for the purpose. It would not be difficult to devise a system under which the best class of reformed men should be offered land and a small outfit in some remote corner of our country. By selecting the best, and making their removal voluntary, we might save to society the larger part of the men whom our prisons reform. We do not wish to disguise the fact that, however remote the place, the men who have lived by crime and escaped punishment would endanger the virtue of the ex-convict. But the criminal classes do not flow to the farthest frontiers except in scanty streams; and the Alaskan territory is as yet as safe as a wilderness can be. Some scheme of the sort is worth the devising. We are making little headway under our present best systems, simply because the ex-convict has no chance. Can he be given a fair chance?

EDITOR'S NOTE-BOOK.

The Civil Service Reform League—and every reform is dependent upon an organization—has addressed a letter to President-elect Cleveland, asking him what he proposes to do about removals from office. Mr. Cleveland answers, with full

information, that he believes in the doctrine of civil service reform. We think that the practical application of the letter to the civil service will make a real and safe basis for judgment. Till we see this, we deem it wise not to express an opinion.

The old "Liberty bell," which was on exhibition during the Centennial at Philadelphia, has been taken to the New Orleans Exposition in charge of a committee. The council of Philadelphia passed a resolution authorizing its removal from Independence Hall for that purpose.

Our national Congress is the subject of a shameful scandal, and the worst feature of it is, our Senators and Representatives know it, but fail to correct it themselves. It is this: By figures prepared by the Public Printer, it appears that during the last four congresses nearly six hundred speeches have been published in the "Congressional Record" as a part of the debates and proceedings of Congress, but not one of them was ever delivered in the House of Representatives. Here is a number of printed but undelivered speeches of Senators. This is an unnecessary expense entailed on the government. It is a falsehood and makes the "Record" a lie, for you can not tell by reading it what has been said or done in Congress. Senator Vest has introduced a resolution into the Senate to abolish the practice, but it is still an open question whether a body of men who do such things will have the moral courage to vote their undelivered speeches out of the "Record."

Our readers will find the article by General John A. Logan, elsewhere in this impression, full of interesting and very remarkable statements concerning rudimentary education in the different states. We think his points concerning the common schools in the Southern states will be a surprise to many people. Another article on the subject from the General's pen will appear in THE CHAUTAUQUAN for March.

A number of *Bradstreet's*, issued in the latter part of December, shows that at that time the whole number of men out of employment in the United States, because the establishments had shut down, and by reason of strikes, etc., was 316,000, or thirteen per cent. of the whole number employed in 1880, which was 2,452,749.

Concerning General B. F. Butler, it is announced that he has signed an agreement with a publishing house to write his political reminiscences, in two volumes, for which he is to receive \$50,000 in cash and a royalty beside. The advent of Messrs. Blaine and Butler into the literary world is suggestive. It is altogether probable that both of these men regard literary fame, when compared to political favor, as a more substantial and enduring quantity, and believe that their names will live longer in literature than in politics. Of course, there may be other motives prompting them, but to some men *fame* hath its peculiar charms.

It was a surprise and sorrow to Christian people to learn that the management at New Orleans had decided to keep the Exposition open on the Sabbath. The very liberal—perhaps we ought to say lax—ideas about the observance of the Sabbath which prevail throughout the country deserve serious thought. Certainly to extend opportunities for making sight seeing and pleasure seeking part of the day's work should be emphatically discouraged.

One of Chautauqua's staunchest friends and most devoted workers, the Rev. S. McGerald, has entered a new field of work. In a recent issue of the *Buffalo Christian Advocate* we find his name announced as the future editor of that paper. Mr. McGerald's new and important position is sure to be well filled. He has the hearty good wishes of all Chautauquans in his new enterprise.

The Indians of Arizona made an exhibit at the recent fair of that territory, which ought to open the public mind to the degree of civilization which some Indians have attained, and suggest, as well, the possibility of such civilization for all Indians. The first premium for the best modern plow displayed

was awarded them, and to show their taste for the antique as well as the modern, it may be mentioned that a wooden plow was displayed which was an exact counterpart of those used 2,000 years ago in the valley of the Nile.

There is no doubt of it—the cause of much human failure and misery is insomnia. Mr. Gladstone has found the only panacea in Christendom which prevents and cures this dread disease, and he gave the secret to the world recently, when he said: "I never allow business of any kind to enter my chamber door. In all my political life I have never been kept awake five minutes by any debate in Parliament."

Now that Mark Twain is attempting to become his own publisher, it may be of interest to read the record of his occupations. He has been in turn, practical printer, steamboat pilot, private secretary, miner, reporter, lecturer and book-maker. Should he succeed in his publishing scheme, he may start a fashion among successful writers which will be hard on publishing houses.

A winter resort where the thermometer falls frequently to 40° below zero, is fully launched at Saranac Lake, in the Adirondacks. The hotels are reported full, and prices of lots have gone up with the usual nimbleness which characterizes embryo resorts. If peculiar, this new fashion may serve as a blessing to the idle and half sick people who are apt to patronize fashionable resorts by bringing into use many vigorous and healthful winter sports.

The wonderful Fish River caves, discovered last year in New South Wales, have been given a new name by the government of that country, and will henceforth be known as the Jenolan caves. Astonishing discoveries are reported to have been made there recently. Our own Kentucky wonder begins to dwindle before the reports of these new subterranean palaces and gardens.

A reading people we know ourselves to be, but it is rather astonishing to discover that we publish twelve times as many daily papers as the United Kingdom. *The Athenaeum* calls attention to the fact that while the United States has one daily paper to every 10,000 inhabitants, the English have one to every 120,000. It would be gratifying if we could feel sure that the quality stood in the same ratio.

The work of the Chautauqua University is attracting attention far and wide. In a recent issue of the *Irish Christian Advocate*, published in Belfast, we notice in answer to a correspondent's query, as to "What is the Chautauqua University?" a long and enthusiastic article upon the plan. The adaptation of the "Chautauqua Idea" to all people and all countries is very wonderful.

A lady is said to have recently offered \$50,000 to the Boston school authorities, to be devoted to the filling of the teeth of children whose parents were too poor to employ dentists. Should she devote her money to the purchase of tooth brushes and toothpicks, and employ a police of teeth, who would compel their daily use by children from babyhood up, she would confer an inestimable benefit upon future generations.

Frances Power Cobbe, well known to the readers of THE CHAUTAUQUAN, concludes her powerful article on "A Faithless World," in the December issue of *The Contemporary Review*, with these strong words: "We have been told that in the event of the fall of religion, 'life would remain in most particulars and to most people much what it is at present'; it appears to me, on the contrary, that there is actually *nothing* in life which would be left unchanged after such a catastrophe."

A wise thing is being done in London. A series of popular lectures upon the subject of precautions—national, local and

personal—to be taken against cholera, has been begun. Now that the menace of this dread disease hangs over our own country, it would be a sensible plan for cities and villages to provide a similar course of instruction. It could be easily arranged, too.

We are happy to extend congratulations to a well known contributor to THE CHAUTAUQUAN, Mr. C. E. Bishop. Mr. Bishop was married in Buffalo, December 31st, to Miss Emma Mulkins, of that city. As the former editor of the Jamestown (N. Y.) *Journal*, of the Buffalo *Express*, and at present of *The Country-side*, of New York, as an editorial writer on *The Assem-*

bly *Herald*, as the author of "Pictures in English History," and of frequent entertaining articles in our columns, Mr. Bishop is widely and favorably known.

The assignee's sale of the stock of imported books and fine art publications of Mr. J. W. Bouton, of New York, is now advertised. It is a real shock to know that this rare collection must be sacrificed. For years his rooms have been a resort for book lovers, and a liberal education to the loiterers about his counters. Perhaps there is no collection in America, outside of the libraries, the sale of which would cause such general regret.

C. L. S. C. NOTES ON REQUIRED READINGS FOR FEBRUARY.

COLLEGE GREEK COURSE IN ENGLISH.

Articles on Plato may be found in the following works: Plato's "Republic," De Quincey; "Plato," Encyclopædia Britannica; Smith's "Greek and Roman Biography," at the beginning of the various editions of his works; Mahaffey's "Classical Greek Literature;" Müller's "Literature of Ancient Greece;" "Against the Atheists," *Christian Examiner*, vol. xl, p. 108; "Life of Plato," *Methodist Quarterly*, vol. xx, p. 368; "On the Immortality of the Soul," *Christian Repository*, vol. xxii, p. 507; "Platonism," *Baptist Quarterly*, vol. i, p. 22; "Ethical Philosophy," *American Church Repository*, vol. xxii, p. 175.

P. 86.—"Cicero," etc. The "De Republica" was a dialogue on what is the best form of the state; the "City of God" treats of the body of Christians in distinction from the City of the World, or those out of the church. St. Augustine wrote this book after the sack of Rome by Alaric to answer the assertion that the destruction of the country was a punishment for the desertion of the pagan deities; "Utopia" is the story of an imaginary land supposed to have been discovered by a companion of Amerigo Vespucci, where the laws were perfect; the "New Atlantis" was an island in the middle of the Atlantic Ocean, where Bacon represents himself to have been shipwrecked, and where he found societies for cultivating art and the sciences.

P. 96.—"Dæmon." "This demon or genius of Socrates, which was not personified by himself, was regarded by Plutarch as an intermediate being between gods and men, by the fathers of the church as an evil spirit, by Le Clerc as one of the fallen angels, by Ficino and Dacier as a good angel, and by later writers as a personification of conscience or practical instinct, or individual tact."

P. 98.—"Origen." (185?-254?) This eminent writer of the early church fathers made an effort to reconcile Platonism with Christianity, and in his commentaries on the Scriptures used the allegorical method almost entirely. "The literal sense is always secondary; and the critic never fails where it is possible to find in the simplest fact or the plainest exhortation some hidden meaning."

P. 99.—"Lemma." When in demonstrating a proposition a second proposition is introduced and assumed as true, or demonstrated for immediate use, it is called a lemma.

P. 100.—"Oneida Community." A society founded at Oneida, New York State, by one John Humphrey Noyes, a perfectionist. He introduced into this community his peculiar views, persuading them to practice a community of women and of goods, to allow women equal business and social privileges with the men, and to live in a "unitary home."

P. 104.—"Silenus." An attendant of Bacchus. He is represented as a very ugly old man, fat, with a bald head and pug nose, and always intoxicated. Generally he rode an ass or was carried by the satyrs. Silenus was also represented as an inspired prophet. When drunk and asleep he was in the power of mortals who could compel him to sing and prophesy by surrounding him with chains of flowers.

P. 105.—"Marsyas." See C. L. S. C. Notes, page 57 of THE CHAUTAUQUAN for October.

"Corybantian reveler." So called from the Corybantes, the priests of Cybele in Phrygia. They celebrated her worship in the wildest, most frenzied dances. The drum and cymbal accompanied this dance.

P. 107.—"Brasidas." The most famous of the Spartan leaders in the Peloponnesian War. After taking many Athenian cities in Macedonia—
E-feb

nia he was killed at Amphipolis, where he defeated Cleon. He was honored by the inhabitants as a hero.

"Nestor." An aged Greek hero of the Trojan war, whose wisdom and advice were considered equal to the gods. "Antenor" held a position among the Trojans similar to that of Nestor among the Greeks. His advice, however, was not followed by his countrymen, and he offered to deliver the city to the Greeks. Upon the capture of Troy he was spared by the victors.

P. 108.—"Boreas." The North Wind was fabled to live in Thrace. The allusion here is to the story that he carried away Orithyia, the daughter of the king of Attica, for his wife. "Agra;" the demus south of Attica was called Agra. It contained two temples; one to Diana, the other to Ceres.

"Typhon." A monster born of Tartarus and Gæa, who attempted to revenge the overthrow of the Titans. His head reached to heaven, his eyes poured forth flame, and serpents were twined about his body. Jupiter killed him with lightning.

P. 109.—"Agnus Castus," or the "chaste tree," the name given to a plant native to the Mediterranean countries, which became associated with the idea of chastity, it is said, from the similarity of the name *agnus* to the Greek word *chaste*. Grecian matrons strewed their couches with its leaves during the feast of Ceres, and in the convents of Southern Europe a syrup made of its fruit was used by the nuns.

"Achelous." A river god—a son of Oceanus—from the earliest times worshiped generally throughout Greece. At one time he took the form of a bull in a fight with Hercules, who conquered him and took one of his horns. This horn the Naiads afterward changed into the horn of plenty.

P. 118.—"Sunium." The promontory forming the southern extremity of Attica; a town of the same name stood upon it.

P. 121.—"Swan's Utterance." Referring to the fable told of the swan, that it sings its sweetest song at death—"the sweetest song is the last he sings." Thus in "Othello," "I will play the swan and die in music."

P. 127.—The chapter on Æschylus may be supplemented by the following readings: "Theory of Greek Tragedy," De Quincey; Müller, Mure, and Mahaffy on Æschylus, in their histories of Greek Literature; Talfourd's "Tragic Poets of Greece," from "History of Greek Literature;" Symond's "Studies of the Greek Poets," *Christian Examiner*, Vol. xliii, p. 140; *Contemporary Magazine*, Vol. iii, p. 351; *Biblia Sacra*, Vol. xvi, p. 354; *North American Review*, Vol. lxvii, p. 407.

P. 129.—"Cyprid." A poem, author unknown, called *Cyprid* or *Cypria*, "either because the author came from Cyprus, or because it celebrated the Cyprian goddess, Aphrodite, and detailed from the commencement her action in the Trojan war. * * * The poem was an introduction to the 'Iliad,' telling a vast number of myths and leading the reader from the first cause of the war up to the tenth year of its duration. It is easy to see that such a vast subject, loosely connected, must have failed to afford the artistic unity which underlies the course of the 'Iliad.'"

"Little Iliad." A poem by Lesches, a Lesbian. It relates the complete story of the sack of Troy, from the contest of Achilles to the fall of Troy. The "Competition for the Arms," we have had in the "Iliad." "Philoctetes" was the chief archer of the Greeks, having been instructed by Hercules in the use of the bow.

On the voyage to Troy he was bitten by a snake and left on the island of Lemnos. In the tenth year of the war the oracle declared the city could not be taken without the arrows of Hercules. Philoctetes was brought, and having slain Paris, the city was taken. "Neoptolemus," a son of Achilles, was one of the warriors that the oracle declared necessary for the capture of Troy. He was one of the heroes concealed in the wooden horse. "Eurypylus" who came from Ormenion to Troy, played a prominent part in battle, slaying many Trojans; he was wounded by Paris. "Ulysses Mendicant," the story of the wanderings of Ulysses. "Lacæna," the Lacedæmonian woman, referring to Helen. "Illii-persis," treats of the plundering of Troy after the capture, and "Apoplus," of the sailing away of the ships. "Sinon." After the wooden horse was finished, Sinon mutilated his body and allowed himself to be captured by the Trojans. He told them that he had been maltreated by his countrymen, and that if they (the Trojans) would drag the horse into the city they would conquer the Greeks. After the Trojans had followed his advice he let the Greeks out of the horse. "Troades," the Trojans.

P. 134.—"Trilogy." A set of three dramas. Each one is in itself complete, but the three are related, one event following or growing out of another, as in Shakspeare's Henry VI.

P. 137.—"New made kings." This allusion will be explained by reading the story of Cronos and Zeus on page 77 of THE CHAUTAUQUAN for November.

P. 144.—"Sweet Muse-Mother." See page 73 of "Brief History of Greece."

P. 145.—"Mantic." Prophetic; derived from the Greek word for prophetic.

P. 152.—"Protagonist." One who fills the leading part in a drama, and hence in any enterprise.

P. 153.—"Ettrick Shepherd." A name given to the Scottish poet, James Hogg. His home was in the Ettrick forest, and when a boy he had been a shepherd. The reference here is to the articles he contributed to the series of papers which appeared in *Blackwood* between 1822 and 1835, called *Noctes Ambrosianæ*, and which were principally written by Christopher North.

P. 154.—"Sophocles." In connection with the chapter on Sophocles the following readings may be used: "Classical Writers," an essay on his life and writings by Campbell; Talfourd's "History of Greek Literature," chapter on "The Tragic Poets of Greece;" Symond's "Studies of the Greek Poets; *Baptist Quarterly*, Jan. 1877; Mahaffy's "History of Classical Greek Literature;" Mure's "Critical History of the Language and Literature of Ancient Greece;" an account of the performance of "Ædipus Tyrannus," at Harvard in May, 1881, will be found in *The Century*, November, 1881; *Harvard Register*, April, 1881; *Boston Sunday Herald*, March 27, 1881; *New York Evening Post*, April 22, 1881.

NOTES ON REQUIRED READINGS IN "THE CHAUTAUQUAN."

HOW ENGLISH DIFFERS FROM OTHER LANGUAGES.

1. Perhaps this absurdity, and the complications it involves, may be better illustrated by the following few lines from one of DeBertrand's novels. (They might be found in a dozen others.)

"Madame, dit il, il y a là une [feminine] personne qui demand M. le Baron."

"Quelle [feminine] est cette [feminine] personne?"

"C'est un [masculine] monsieur," etc.*

Thus, it will be seen, both feminine and masculine articles must be used to designate the same object; and a person must be spoken of as feminine, although the person is a man; the reason being that *personne*, the word, is feminine.—*Richard Grant White*.

2. For contrary to apparently reasonable assumption, the history of language shows that minute and highly wrought grammatical forms are the signs, or at least the accompaniments, not of advanced civilization and high culture, but of a rude and savage condition of society.

"Madame," said he, "there is a person without who asks for the Baron."

"Who is this person?"

"It is a gentleman," etc.

P. 173.—"Abæan." From Abæa, a town of Phocis, where stood a very ancient temple and oracle of Apollo.

CHEMISTRY.

P. 13.—The abbreviations used in the atomic symbols are taken from the Latin or Greek names, and when these differ from the English there seems to be no correspondence between the name of the element and its atomic symbol; as *An* for gold.

Hydrogen is the lightest form of matter known, and the weight of its atom is taken as the unit of the system of weights. In the table the numbers in the column of atomic weights give the weight of one atom of each substance as compared with one atom of hydrogen. For instance, an atom of aluminum is twenty-seven times as heavy as an atom of hydrogen.

A-lu'mi-num; Bro'mine; Caesium (ke'si-um); Cerium (se'ri-um); Chlorine (klo'rine); Chro'mi-um; Di-dyn'i-um; Er'bi-um; Flu'or-ine; Gal'li-um; Hy'dro-gen; Glu-cinum (glu-si'num); I-rid'i-um; I'o dine; Lan'tha-num; Lith'i-um; Manganese (mang'a-neze'); Mol-yb-de'num; Ni-o'bi-um; Ni'tro-gen; Os'mi-um; Pal-la'di-um; Phos'pho-rus; Plat'i-num, or Pla-ti'num; Po-tas'si-um; Rh'o'di-um; Ru-bid'i-um; Ru-the'ni-um; Scan'di-um; Se-le'ni-um; Strontium (stron'shi-um); Tan'ta-lum; Tel-lu'ri-um; Thal'i-um; Tho'ri-um; Ti-ta'ni-um; Tung'sten; U-ra'ni-um; Va-na'di-um; Yt-ter'bi-um; Zir-co'ni-um.

P. 19.—"Guyton de Morveau," gwe'ton deh mor'vo. (1737 1816.) A French chemist. He suggested a new nomenclature which was adopted by Lavoisier, and wrote a "Dictionary of Chemistry."

P. 33.—The symbols are to be read by calling the letters and the small numbers one after the other, in the order in which they occur. If a compound contains an element which requires two letters to express it, the latter one, always a small letter, as on page 35, A g N O₃, it is to be read in the same way, with a shorter pause between the A and g than between the other letters, as A-g-N-O₃. Ag and O₃ might be compared to words of two syllables. The number always belongs to the letter which it follows.

P. 60. "Sir Humphrey Davy." See C. L. S. C. Notes, page 59 of vol. v of THE CHAUTAUQUAN.

"Biot," Jean Baptiste (be'o'). (1774-1862.) A French savant. His fame rests upon his mathematical, physical, and astronomical writings. Biot's description of Cavendish, translated from the French: "The richest of all learned men, and probably, also, the most learned of all rich men."

P. 63.—"La Trappe." A Benedictine convent in France, famous for the austerity of its monks, founded in the twelfth century.

"Van Helmont." (1577-1644.) A Flemish physician, chemist, and philosopher. He attempted a reform in medicine, but his system was so mingled with mysticism that it is not of much practical value. He succeeded, however, in introducing much exactness into science.

The further we penetrate the obscure of antiquity, the more grammar we find. The oldest language known to us, the Sanskrit, is the most complex and elaborate in its grammar; the youngest, English, is, to all intents and purposes, grammarless; and Sanskrit grammar is at least four thousand years old. My readers will now see why it was that I said the minute forms and complicated grammatical relations of the Greek language are not the signs of a high development of language, but were relics of barbarism.—*Richard Grant White*.

3. "Galore," ga-lore'. Plenty, abundance.

SUNDAY READINGS.

1. "Fuller," Thomas. (1608 1661.) An English author and divine. "The style of all his writings is extremely quaint and idiomatic, in short, simple sentences, and singularly free from the pedantry of his times."—*American Cyclopædia*.

2. "Robert Hall." (1764-1831.) An English writer and preacher of the Baptist church. When he was eleven years of age his teacher said that he could not keep up with the boy. No man in modern times ranked higher as an orator.

3. "Goulburn." (1818—) An English clergyman. He was in 1859 head master of the Rugby School, in 1866 was made Dean of Norwich. He was a voluminous and popular writer.

4. "Bascom," Richard H. (1796-1850.) An American clergyman, bishop of the Methodist Episcopal Church, South. His works comprise sermons, addresses and lectures.

CHEMISTRY.

2. "Lavoisier," lā'vwā'ze-a'. See Appleton's "Chemistry," pages 19, 21 and 118. He was condemned to death by a revolutionary tribunal at Paris on a frivolous charge brought against him as one of the farmers of the taxes during the Reign of Terror.

3. "Phlogiston," flo-jis'ton. Stahl supposed it to be pure fire, fixed in combustible bodies in order to distinguish it from fire in a state of liberty.

4. "Magnesium." A shining, almost silver-white metal. When heated it may be rolled out into very thin, long strips resembling ribbons, which will burn with an intense light. In burning it produces magnesium oxide or magnesia, which falls as a fine white powder.

5. "Dr. Priestly." See "Chemistry," page 118. (1733-1804.) An eminent English divine and philosopher. His partiality to the French Revolution excited the English against him, and in one of the riots his home, library and manuscripts were destroyed by the fire kindled by an angry mob. His later home was in Northumberland, Pa. He wrote between seventy and eighty volumes on history, literature, theology and science.

6. In a few volcanic districts steam escapes from the earth, which contains small quantities of boric acid. These vapors are condensed into water, which is again evaporated and the acid crystallized out. When this acid is mixed with alcohol and the solution set on fire it burns with a green flame. See "Chemistry," page 157.

7. "Corpuscles of the blood." Minute particles, both red and white, existing in the blood, which can be seen under a microscope. In the human species the red corpuscles are thick and circular. They are so small that Young says it would take 255,000 of them to cover a surface of a square inch. They are elastic and pliant, so that they can pass through blood vessels having a smaller diameter than themselves. The white corpuscles are more globular than the red, and contain more fat, and have the power of changing their form. These spontaneous changes have been thought by some scientists a proof that they are microscopic animals. But this is scarcely a sufficient reason for admitting that they are animalculæ, as the muscles of a body, when separated from it, often manifest apparently spontaneous movements.

8. Phosphoric acid is always produced by burning phosphorus in air or oxygen. The experiment may be performed as follows, but before undertaking it see page 167 of the "Chemistry," and note with how much care it must be handled: Place a fragment of carefully dried phosphorus in a small cup on a stand in the middle of a large plate, ignite it by a hot wire, and place over it a bell-glass. White fumes will fill the glass and aggregate into small particles, which will fall to the plate, presenting the appearance of a miniature snow storm.

9. Barium is a yellow, lustrous, malleable metal. It is used in fireworks, for the green color it gives off in burning.

10. "Bayberries." The plant, called also wax myrtle, is a low, crooked shrub found throughout the United States, especially near the sea coast. It grows to a height of from three to eight feet. The naked flowers appear in April and May, in clusters, of which from four to nine ripen into dry berries. Plantations of them have long been cultivated in Europe, and they have been raised in Algeria. For many years they have been an article of commerce. A bushel of the berries will yield from four to five pounds of wax.

11. "Strontium." It takes its name from Strontian, in Scotland, where it was first observed as a carbonate. It is a pale yellow metal, harder than lead. If strontium carbonate be dissolved in nitric acid and mixed with combustible substances it will burn with a beautiful carmine red flame, and for this purpose is much used in fireworks.

12. "Sodium." See "Chemistry," page 67. It is a lustrous, silver-white, soft metal. When thrown upon water, if it be prevented from moving, or if the water be warm, it ignites, burning with its characteristic yellow flame.

13. Extinguishing flame by carbon-di-oxide. See "Chemistry," page 218.

14. "Lignite." Also called brown coal. It is the most imperfectly mineralized form of coal. In some instances plants are so little changed that they can easily be classified by the structure of the leaves and the fruit. The fiber has become so impregnated with bitumen that it burns with its peculiar flame and smoke. The jet so much used in jewelry is a black variety of lignite, very compact in texture, and taking a high polish.

15. "Kohinoor," koh'-i-noor' (mountain of light). This famous stone is now in possession of Queen Victoria. It was obtained before the Christian era in one of the mines of Golconda, and passed to successive sovereigns of India until it was borne away by a Persian conqueror in the early part of the eighteenth century. In 1813 it was bought back by the ruler of Punjab. When Punjab was annexed to the East India Company's territory it was surrendered to the Queen of England. It is said to have weighed about 900 carats originally, but by cutting to have been reduced to a weight of nearly 279 carats. By recutting it was again reduced so as to weigh 186 carats, and at this time was shown (1851) at the Great Exhibition. Since that time it has been again recut, for the third time, and now weighs 123 carats, and is estimated at \$600,000. For the other "Paragons" see "Chemistry," page 204. It is questioned whether the "Grand Mogul" is a pure diamond. The largest undoubted diamond is the "Orloff," in the scepter of the Emperor of Russia. It weighs 194½ carats. The "Regent" or "Pitt" is thought to be the purest and most perfect brilliant in Europe. It weighs now 136½ carats, but its original weight was 410 carats, and the fragments split off when it was cut were valued at some thousand pounds. It was placed in the hilt of the sword of state by Napoleon I. The "Grand Duke" belongs to the Emperor of Austria, and weighs 134 carats. The "Star of the South," found in Brazil, weighs 124 carats. The "Sancy" weighs only 53½ carats. It belongs to the Emperor of Russia.

16. "Golconda." An ancient city and fortress of India, once the metropolis of the kingdom of Golconda. It is renowned for its diamonds, which are, in truth, only cut there.

17. "The Dark Continent." Africa, so called because so little has been known of it through all history; but through the zeal and enterprise of modern explorers we are led to hope that "the day is not far distant when the secret places of this land of mystery will be penetrated by the light of science and civilization."

TEMPERANCE TEACHINGS OF SCIENCE.

1. "Malice prepense." Malice aforethought, deliberately and premeditated.

2. "Professor Newman." See C. L. S. C. Notes in THE CHAUTAUQUAN for November 1884, page 115.

3. "Cardinal Manning." (1808—) An English Roman Catholic cardinal, the author of several works. He is the son of the late William Manning, member of Parliament, and governor of the Bank of England. He was educated at Oxford, as a member of the Church of England. In 1857 he joined the Catholics, and was ordained priest. In 1865 he was nominated by the pope Archbishop of Westminster, and in 1875 he was made cardinal, an office next in rank to that of pope. He is one of the most prominent men in London, and the leading representative of the Roman Catholic Church in England.

4. "Thugs." A set of robbers and assassins who lived in India, and worshiped the goddess Kali. They roamed over the country in bands, and put to death by strangulation any traveler whom they met. The British government has exterminated them.

5. "Leibnitz." See notes on the "Art of Speech" in THE CHAUTAUQUAN for November, 1884.

6. "Lord Palmerston." (1784-1865.) A British statesman. He succeeded Lord Aberdeen as prime minister in 1855, and retired in 1858, on account of the defeat of a bill introduced with reference to the attempted murder of Napoleon III. by Orsini. In 1859 he was again made premier and held the post until his death.

7. "Loch Fyne." An inlet of the sea on the western coast of Scotland, running into Argyll for about forty miles, with an average width of five miles. The town of Inverary stands near its head.

8. "Homburg." A town in Prussia, noted for the gambling which

was extensively carried on there formerly, but which was suppressed by the Prussian government in 1870.

"Baden," or "Baden-Baden." A German watering place situated on the Oos, at the foot of the Black Forest. It was formerly celebrated for the gaming tables found in the *Conversationshaus*, which was the principal resort for visitors. The licenses for gambling expired in 1872, and have not since been renewed. Those who have read "Daniel Deronda" will remember that it was at Baden that Deronda first saw Gwendolen Harleth, when she was engaged in gambling. The description of the persons gathered round the long tables is very interesting and vivid, and gives a good insight into fashionable life at Baden in those days.

9. "Lord Brougham." (1779-1868.) Lord Chancellor of England. He took a strong stand on the side of the suppression of the slave trade, and favored Roman Catholic emancipation, and labored earnestly in the cause of popular education. As an orator he was second only to Canning.

KITCHEN SCIENCE AND ART.

1. "Alkaloid." The name given to those extracts of vegetables which will unite with acids to form salts.

2. "Caffeine," *caf-fe'ine*. The alkaloid of coffee; the same extract of tea is called *théine*. It is present in coffee to the extent of one per cent; in tea from two to six per cent. It can be extracted by using acetate of lead. It has a bitter taste, and acts powerfully upon the system when taken in doses of from two to ten grains, causing palpitation of the heart, confusion of the senses, and sleeplessness.

3. "Theo-bromine." The alkaloid of chocolate, extracted in the same manner as from tea or coffee.

4. "Thea viridis," *thé'a vir'i-dis*. (Green tea.) The name given to that species of tea plant formerly supposed to yield green tea.

5. "Camilliacæ," *cam-mil'li-a'ce-e*. An order of plants comprising trees or shrubs with alternate, simple, feather-veined leaves, and regular flowers.

6. "Loblolly bay." A tree found in the Southern States, growing to the height of from thirty to eighty feet, having long, narrow leaves, and large, white flowers, about two inches across, and resembling the single camellia.

7. "Stuartia." Catesby. A shrub having deciduous leaves, and large, fragrant, white flowers.

8. "Tannin." The astringent principle contained in a great variety of plants, which renders them capable of combining with skins of animals to form leather.

9. "Turmeric," *tur-me'ric*. A name given to the tuber-like root of a plant found in Asia. As prepared for commerce the roots are of the size of the little finger, and two or three inches long, of a yellowish color. They have an odor like ginger, and an aromatic taste. They form an orange-yellow powder, which is used in dyeing. Prussian blue is prepared from prussic acid, potassium, and a solution of sulphate of iron. Gypsum is a native sulphate of lime, that, when calcined, forms plaster of Paris.

10. "Caper." The caper bush is a native of the south of Europe; it is a climbing shrub which flowers all summer. The buds are gathered every morning, and preserved in vinegar and salt. They have an agreeable pungency of taste. "Pekoe." The young leaf buds of a kind of tea known as the pekoe, which is the choicest of black teas, are gathered as early as April, and sometimes mixed with other teas, to flavor them.

11. "Caseine," *ca'se-ine*. An organic compound allied to albumen, found in milk. It may be coagulated and separated from the milk by the application of rennet.

12. "Cibber," *sib'ber*. (1671-1757.) An English poet, appointed to be poet laureate in 1730. He figures in the "Dunciad." See THE CHAUTAUQUAN, vol. v, page 213.

13. "Waller." (1605-1687.) An English poet.

14. "Coffea Arabica," *cof-fe'a A-ra'bi-ca*.

15. "Rubiaceæ," *ru-bi-a'se-e*. An order of herbaceous plants of which there are three or four hundred species; abounding chiefly in the northern hemisphere and upon the mountains in the tropics.

16. "Bouvardias." A class of autumn and winter blooming house

plants in the northern climates. Leaves regular; flowers appear in clusters, and are something like the honeysuckle in form. They vary in color from a pure white to a deep scarlet.

17. "Koran." The sacred book of the Mohammedans, and their chief authority, also, in political, military, and ethical matters.

18. "Caffeone." A fragrant, volatile oil contained in coffee.

19. "Sterculiaceæ," *ster'cu-li-a'se-e*. Large trees or shrubs, with simple or compound leaves, and flowers like those of the mallow, except that the anthers turn outward.

20. "Mahernia," usually called *Mahernia odorata*, is an exotic flowering shrub cultivated in conservatories, mostly for its rich fragrance.

HOUSEHOLD BEVERAGES.

1. "Made-over tea." In Chinese tea houses, large jars are kept, into which the dregs of all the tea that has been used are thrown. These exhausted leaves are dried, carefully rolled again, and thrown upon the market for a second sale. It is said this tea is easily detected if coloring matter has been used, but when re-rolled without, only a chemical analysis can disclose the fraud.

2. "Reliable." Much fault has been found by critics with this word. It is claimed that it has no right to a place in our language. *Able* or *ible* is a suffix which, added to the stem of a transitive verb, gives an adjective which may be defined by placing the word *able* before the passive infinitive of the verb whose stem has been used; for example: tolerable, able to be tolerated; admissible, able to be admitted; deniable, able to be denied, etc. But reliable means able to be relied upon. The preposition has to be supplied. The proper form of the adjective would be the awkward word, "reliable," or "reliuponable." The word is favored in the dictionaries, but trustworthy is preferable.

3. "Cosey." A wadded cap made to fit the teapot closely, and thus hold in the aroma and the heat.

4. "Café au lait," *ca-fa o la*.

HUXLEY ON SCIENCE.

1. "Aliases." The plural of alias (*a'le-as*). Meaning another name, an assumed name.

THE CIRCLE OF THE SCIENCES.

1. "Napier," *na'pe-er*, John. (1550-1617.) An English mathematician. "Logarithms" are numbers so related to natural numbers that the multiplication and division of the latter may be performed by addition and subtraction, and the raising to powers and the extraction of roots by the multiplication and division of the former. They are arranged in tables which can be readily understood and used, and they save enormous calculations and labor.

2. "Kepler," Johann. A German astronomer.

3. "Mercator's Chart." In all the charts in use before Mercator's, curved lines were drawn representing the meridians and parallels. A vessel which followed these lines always receded too far from the equator, and, if land did not intervene, would describe a spiral course and finally reach the pole. Mercator constructed a map as follows: A line, AB, was drawn representing the equator, and was divided into 36, 24 or 18 equal parts for meridians at 10°, 15°, or 20° apart, and the meridians were then drawn through them perpendicular to AB. The distance of the parallels and the tropics, and the arctic circles were marked from the equator on the sides, and these points joined by straight lines. The map does not give a natural representation, as the polar regions are immensely exaggerated. The distortions in the form of the countries and the relative distances of places are rectified by making the degrees of latitude increase proportionably to those of longitude.

4. "Quadrant." Quadrants were used for surveying, making astronomical observations, and, in navigation, for determining the meridian altitude of the sun, and from that the latitude of the observer. They were made of a great variety of form and size to suit their several uses. The interest attaching to them at the present time is chiefly historical, as they have been superseded by the sextant and the full circle.

"Davis." An eminent English navigator of the latter part of the sixteenth century.

"Hadley," John. An English mathematician of the early part of the eighteenth century. An intimate friend of Newton.

TALK ABOUT BOOKS.

That most remarkable poem of the Orient, the "Rubáiyát" of Omar Khayyám, has recently had the rare fortune of receiving from translator, artist and publisher an almost perfect treatment. Its translation places it among English classic poems, its illustration and make-up among American classic art books. This poem, very imperfectly known among us, is the work of a Persian astronomer and poet, Omar Khayyám, or Omar the Tent-Maker, a native of Naishapur, in Khorassan. He was born in the latter half of the eleventh century, and became a favorite of the rulers of the realm. His life was, so goes the chronicle, "busied in winning knowledge of every kind, and especially in astronomy, wherein he attained to a very high preëminence. Under the Sultanate of Malik Shah, he came to Merv and obtained great praise for his proficiency in science, and the Sultan showered favors upon him." Omar was an honest thinker; he refused the hollow mysticism of the times, and framed a system which approaches Epicureanism. His views of life, his fruitless search for Providence, his sad conclusion,

"I came like water, and like wind I go,"

together with his final refuge in the wine cup, with the command

"Drink, for you know not whence you came nor why,
Drink, for you know not why you go, nor where,"

are the subjects of his "Rubáiyát," or quatrains. In the original these verses have no connection. The translator, Mr. Edward Fitzgerald, selected those which seemed to him most suitable, and arranged them into a sort of eclogue. This translation met with a hearty reception. Mr. Fitzgerald had been fortunate enough to make Omar Khayyám much more lucid and entertaining than Omar had made himself. An interpretation of the poem was undertaken in May 1883, by Elihu Vedder. The interest in the elegant volume just issued by Messrs. Houghton, Mifflin & Co., centers, of course, about these illustrations. There is not a line of the poem but what takes a new and powerful meaning under his treatment. Indeed, it seems as if in many cases the verses were but a key-note, the drawing the completed strain. The artist seems to have been inspired by the same sense of mystery, sadness, and final devotion to pleasure which influenced the author. His idea of Omar's philosophy is most beautifully represented in the picture called "Omar's Emblem." In it life is represented by a whirling stream, upon which the mortal, under the form of a rose, has floated in. Along the stream the leaves are scattered here and there, while crushed and half petalless the rose floats into oblivion. This whirl of life surrounds what we may suppose to be the emblem which incessantly confronted Omar's mind—a human skull; upon this is perched a singing nightingale—a sign of the music which in spite of the mockery of existence the poet always heard, and in which he found the sole relief for living. The pictures include a wealth of suggestion which only diligent and sympathetic study discloses. They show surprising fancy and versatility, while at the same time the finish of each is most perfect.

Among the handsome books of the year must be classed Cassell's new edition of "Atala,"† Chauteaubriand's charming romance of Indian life and love. Though the story is far from filling our modern ideas of a novel, it is one of those rare, pure love tales which never loses its hold upon us. It will always keep its place with "Undine" and "Paul and Virginia." The present edition contains illustrations by Gustave Doré, which, though inferior in some respects to later works by him, are still very beautiful pictures. Only a few of the illustrations of the "Atala" show that weird power and strong imagination for which Doré is so famous, but what we miss there is quite made up by the interest we feel in his conceptions of American scenery, of which he knew nothing except from description. These conceptions, if sometimes very

incorrect, are still full of exuberant fancy. The binding and letter-press of the volume are superior, making a most charming gift book.

The "Prose Writings of William Cullen Bryant,"** edited by Parke Godwin will meet with a cordial welcome from all readers of good literature. They appear in two volumes, and properly belong to a set called "The Life and Works of William Cullen Bryant," forming the fifth and sixth volumes of the set. It was the thought of the editor at first to publish entire the orations, addresses, and various letters of Mr. Bryant, but careful consideration led him to think that this would extend the work beyond desirable limits; so it was confined to a few selections from the various departments in which the author displayed his power. Volume V of the set, or I of the "Prose Writings," contains several "Literary Essays," "Narratives," and "Commemorative Discourses" on Cooper, Irving, Halleck, and Verplanck. Volume II contains "Sketches of Travel," "Occasional Addresses," comprising those on Shakspeare, Scott, Burns, Goethe, Schiller, and many others; and "Editorial Comments and Criticisms." The selections are all timely and well adapted to catch the reader's fancy and interest. There can scarcely fail to come to one, however, who is the possessor of these books, a feeling of regret that the editor did not follow his original intention and give more of the writings of the author. The wish to have at hand the complete works of the great American, and to have them in as attractive a form as that in which Mr. Godwin has arranged them is strong enough to far outweigh his unjustifiable fear of making too voluminous a collection.

BOOKS RECEIVED.

Euphrasia and Alberta. Poetic Romances. By John Ap Thomas Jones. Philadelphia: J. B. Lippincott & Co. 1884.

French Conversation. By J. D. Gaillard. New York: D. Appleton & Co. 1885.

Journal of the General Conference of the Methodist Episcopal Church, held in Philadelphia, May, 1884. Edited by the Rev. David S. Monroe, D.D. New York: Phillips & Hunt. Cincinnati: Cranston & Stowe.

The Life of John Howard Payne. Author of Home, Sweet Home. With illustrations. By Gabriel Harrison. Philadelphia: J. B. Lippincott & Co. 1885.

Elements of Geometry. By Eli T. Tappan, LL.D. New York: D. Appleton & Co. 1885.

Elements of English Speech. By Isaac Bassett Choate. New York: D. Appleton & Co. 1884.

The Life of the Rev. Philip William Otterbein. By the Rev. A. W. Dewey, A. M. With an introduction by Bishop J. Weaver, D.D. Dayton, Ohio: United Brethren Publishing House. 1884.

The Children of the Bible. By Fannie L. Armstrong. With an introduction by Frances E. Willard. New York: Fowler & Wells Co., Publishers. Price, \$1.

Outlines of Metaphysics. By Herman Lotze. Translated and edited by George T. Ladd. Boston: Ginn, Heath & Co. 1884.

Appleton's Chart Primer. By Rebecca D. Rickoff. New York: D. Appleton & Co. 1885.

The A B C Reader. By Sarah F. Buckalew and Margaret W. Wells. New York: A. Lovell & Co.

The Philosophy of Ralph Cudworth. By Charles E. Lowry, A. M. New York: Phillips & Hunt. Cincinnati: Cranston & Stowe. 1884.

Elements of Calculus. By James M. Taylor. Boston: Ginn, Heath & Co. 1884.

Notes on Ingersoll. By the Rev. L. A. Lambert. Buffalo, N. Y.: Buffalo Catholic Publication Company. 1884.

The Methodist Year Book for 1885. Edited by W. H. De Puy, D.D., LL.D. New York: Phillips & Hunt. Cincinnati: Cranston & Stowe.

One Little Rebel. By Julia B. Smith. New York: Phillips & Hunt. Cincinnati: Cranston & Stowe. 1884.

The Story of the Resurrection. By William H. Furness, D.D. Philadelphia: J. B. Lippincott & Co. 1885.

Square and Compass. By Oliver Optic. With illustrations. Boston: Lee and Shepard. New York: Charles T. Dillingham. 1885.

Friends in Feathers and Fur. For Young Folks. By James Johannot. New York: D. Appleton & Co. 1885.

*Prose Writings of William Cullen Bryant. Edited by Parke Godwin. New York: D. Appleton & Co. 1884.

*Rubáiyát of Omar Khayyám, the Astronomer-Poet of Persia. Rendered into English verse by Edward Fitzgerald, with an accompaniment of drawings by Elihu Vedder. Boston: Houghton, Mifflin & Co. 1884. Price, \$25.

†Atala. By Chauteaubriand. Translated by James Spence Harry. Illustrated by Gustave Doré. Introduction by Edward J. Harding. Extra cloth, full gilt, \$5.00; full Morocco, extra, \$10. New York: Cassell & Co. 1884.

SPECIAL NOTES.

Among the many beautiful things which art and taste and money combined to furnish for the holidays nothing surpassed the Christmas cards of L. Prang & Co. In design, coloring and finish it is difficult to see how they could be improved. It will interest those of our readers who expect to visit the New Orleans Exposition to know that all Messrs. Prang & Co.'s former prize cards and the frames, with consecutive proofs of a reproduction, have been sent to the Massachusetts department at New Orleans by special invitation of the State Commission. The collection of prize designs recently exhibited in New York and Boston by Mr. L. Prang is now, by special invitation, shown in the Art Institute in Chicago, and, in response to a similar request made by the managers of the Museum of Fine Arts at St. Louis, this collection of paintings will be sent to that city later on.

The banquet of the C. L. S. C. Alumni, which was to have been in Boston in February, will be held at Lake View, Wednesday, July 22. The committee decided upon this change when it was found that Chancellor Vincent, Professors Hurlbut and Holmes, also Prof. Sherwin, could not be present in February.

Important to members of the Class of 1888. The first article on "How to make Home Beautiful," which was published in *Alma Mater* No. 2 last year, will be mailed to all members of the class of 1888, during the present year, 1884-5. We were unable to have this article reprinted in time to accompany *Alma Mater* No. 3, which was sent last month to all members of the C. L. S. C.

J. H. VINCENT.

The last copy of *The Outlook* published by the class of 1884 appeared in December. It contains much news of interest to the class, the class list of graduates as made up to November 1st, including 1,387 names, and the editor's farewell. *The Outlook* has been a faithful and zealous advocate of the interests of the "Irrepressibles."

People of all denominations loved and honored Bishops Simpson and Asbury of the M. E. Church. At the recent centennial celebration of that church a fitting souvenir to these two noble men was displayed in the form of medallions, on which were embossed the heads of the two bishops. These medallions were mounted in a leather case lined with satin. It forms a beautiful object for any one's collection of souvenirs.

'82 CLASS MOTTO.—Members of the Pioneer class are reminded that the selection of a motto was remitted to a committee. Any member prepared to make a suggestion in the matter is invited to send it to Lewis C. Peake, Drawer 2,559, Toronto, Canada. The general feeling of the class was that the motto should be in English.

THE CHAUTAUQUA MUSICAL READING CLUB is a new department of Chautauqua work. The course has been thoughtfully arranged in consultation with many among the most cultured musicians in the land, and is of such recognized merit that, with the hearty approval of the faculty, it has been adopted in the New England Conservatory of Music at Boston. Information may be obtained concerning the C. M. R. C. by addressing W. F. Sherwin, Director C. M. R. C., Boston, Mass.

C. L. S. C. GRADUATES.

The following list of graduates of the Class of 1884 appears according to states. It has been prepared with care by the office secretary, Miss Kate F. Kimball.

Persons whose names are marked * have died since graduation.

Maine.

Allen, Mrs. Almira L.
Beale, Miss Annie C.
Beck, the Rev. Charles A.
Bruce, Mrs. Eveleen
Buck, Mrs. F. R.
Estes, Miss Eva M.
Fletcher, Mrs. Sarah F.
French, Mrs. Emma M.
Grant, Mrs. Nellie
Hobart, Mrs. Augusta A.
Longfellow, Miss Mary O.
Lunt, Miss Mary K.
Page, Mrs. Geo. N.
Palmer, Mrs. Maria B.
Reynolds, Mrs. Mary J.
Robinson, Mrs. Frances H. B.
Sanborn, Miss Guelma P.
Skinner, Miss Sarah E.
Varney, Miss Clara B.
Woodbury, Mrs. Mae B.

New Hampshire.

Avaun, the Rev. J. M.
Baker, Miss Nellie M.
Beckwith, the Rev. Geo. A.
Cleworth, Mrs. Cleora B.
Emerson, Miss Hattie E.
Farwell, Mrs. Marion L.
James, Mrs. Lizzie B.
Lane, John G.
Lewis, Mrs. Hannah E.

Moore, George W.
Pettengill, Miss Selina D.
Russell, Mrs. Helen I.
Senter, Miss Nella M.
Shepherd, Miss Betsey B.
Stiles, Miss Nellie
Worthley, Mrs. Emma L.

Vermont.

Clark, Mrs. Mary W.
Clark, Miss Susan E.
Farnham, Mrs. Roswell
Farr, Miss Hattie J.
Howell, Mrs. Elsie S.
Lovejoy, Miss Martha H.
Merrill, the Rev. Charles H.
Merrill, Mrs. Laura B.
Read, Miss Keziah H.
Sheldon, Mrs. Charles F.
Stedman, Miss Clara M.
Streeter, Mrs. Emilie E.
Thomas, Mrs. H., Jr.
Wires, Mrs. Eveline W.

Massachusetts.

Alexander, Miss Harriet I.
Allis, Miss Mary L.
Alvord, the Rev. Augustus
Anderson, William E.
Baber, Miss Eliza M.
Baber, Miss Fannie
Bacon, Mrs. Leora A.

Baker, Samuel E.
Ball, Miss Nettie
Ball, Miss Minnie L.
Ball, Miss Carrie E.
Batchelder, Miss Harriette S.
Blackmer, Miss Nellie E.
Blackmer, Miss Mary L.
Blake, Miss Evelyn A.
Blanchard, Frederic W.
Blanchard, Miss Isabel I.
Blanchard, Walter A.
Blodgett, Miss Maria L. C.
Borden, Miss Helen M.
Borden, Mrs. Harriet A.
Bosworth, Miss Mary E.
Bowers, George N.
Boyd, Miss Margaret W.
Bradford, Mrs. Helen M.
Bradford, Lemuel B.
Bridges, Mrs. Jennie L. C.
Brigham, Miss Mary M.
Brigham, Miss Helen F.
Brooman, Mrs. L. G.
Brown, Miss Nellie M.
Brown, Miss Lottie E.
Burgess, Miss Lucy A.
Burnett, Mrs. Hattie C.
Burns, Miss Mirriam A.
Buswell, Mrs. Clara L.
Caffin, Miss Mabel B.
Candlin, the Rev. Joseph
Candlin, Mrs. Ruth E.
Chapman, Mrs. Lizzie C.

Chapman, Miss Eva
Chase, Charlie S.
Chauncey, Mrs. Mary C.
Cheever, Miss Lizzie H.
Chenery, Miss Hattie M.
Cheney, Miss A. Oreanna
Clutia, Mrs. S. P.
Coburn, Mrs. S. A.
Cochran, Miss Emma A.
Cogswell, Miss Kate A.
Colesworthy, William G.
Coombs, Miss J. Fannie
Cowan, Mrs. P. D.
Crane, Miss Mary L.
Crosby, Miss Sarah J.
Cummings, Miss Mary E.
Cummings, Mrs. Ada A.
Cushing, Mrs. Mary H.
Cushing, the Rev. John R.
Davis, Miss Emma A.
Davis, Mrs. Mial
Delano, Mrs. Emma L.
Delva, Mrs. K. Augusta
Dennis, Miss Georgette E.
Dimick, Mrs. Lizzie G.
Doane, Mrs. Clara J.
Doty, Mrs. Julia C.
Douglass, Miss Mary
Drew, Miss Fidelia
Eastland, Miss Georgiana
Eaton, Mrs. Belle M.
Eaton, Mrs. Daniel W.
Eldridge, Mrs. Vesta K. F.

Ely, George W.
 Ely, Miss Josephine L.
 Emerson, Miss Mary J.
 Fairbanks, Mrs. Lydia L.
 Fairchild, Mrs. Maria H.
 Fay, Mrs. Abby B.
 Fay, Miss Anna B.
 Fay, George E.
 Fay, Miss Anna C.
 Fisher, Mrs. Angie B.
 Fiske, Miss Ella A.
 Flanders, Mrs. Elvira W. C.
 Floyd, 2d, David
 Fraser, Mrs. Daniel F.
 Freeman, Miss Emma F.
 Freeman, Miss Annie E.
 French, George B.
 Frye, Charles H.
 Fullarton, Mrs. Mary A.
 Gardner, Mrs. Sarah A.
 Gill, Mrs. M. F.
 Goodwin, Miss Annie A.
 Goodwin, Miss Lucy B.
 Grant, Miss Mary
 Grant, Miss Martha
 Greenwood, Miss Nellie
 Grout, Mrs. Ellen L.
 Gustin, Mrs. Ellen G.
 Hadley, Miss Amanda M.
 Hall, the Rev. A. J.
 Hammond, Miss Jennie S.
 Hancock, Mrs. Warren
 Harrington, Francis M.
 Harrington, Miss Ada L.
 Harrington, Mrs. Mary L.
 Harris, Miss Sarah G.
 Hawley, Miss Emily E.
 Hayward, Miss Nellie A.
 Hayward, Mrs. Susan C.
 Hersey, Miss Lizzie M.
 Hersey, Miss Ellen M.
 Hewins, Miss Emeline
 Higgins, Miss Sarah B.
 Hildreth, Mrs. Kate B.
 Hitchcock, Mrs. Nellie E.
 Hodges, Mary A.
 Holway, Mrs. Susan B.
 Holway, Miss Sadie O.
 Houghton, Miss Mary J. W.
 Howard, Henry F.
 Howard, Mrs. Mary C.
 Howard, Mrs. Louisa B.
 Hull, Miss Abby F.
 Hutchinson, Miss Cora F.
 Inman, Mrs. Edna M.
 Irving, Charles H.
 Irving, Mrs. Sarah M.
 Johnson, the Rev. Charles T.
 Jones, Addison W.
 Jones, Mrs. Sophronia B.
 Jones, Miss Eva G.
 Keene, Mrs. Fannie S.
 Kendall, Miss Amanda M.
 Kimball, Edward A.
 Kimball, Mrs. Elsie E.
 King, Mrs. Laura C.
 Kinsman, Miss Mary L.
 Kneil, Miss Emily G.
 Knight, Joseph K.
 Ladd, Mrs. Rebecca E.
 Lawrence, Miss Mary M.
 Lee, Mrs. Elizabeth R.
 Leonard, Mrs. Kate H.
 Leonard, Miss M. Fanny
 Leonard, Miss Anna R.
 Lewis, Miss Lizzie M.
 Light, Charles F.
 Light, James B.
 Light, Mrs. Ellen E.
 Lindsay, Miss Florence
 Litchfield, Mrs. Isabelle W.
 Little, Mrs. William C.
 Lloyd, Miss Mary A.
 Manning, John M.
 Manning, Mrs. J. M.
 Merriam, Miss Susan M.*
 Marsh, the Rev. Francis J.
 Marston, Mrs. Carrie M.

Marston, Luther M.
 Matthews, the Rev. Henry
 McClure, Miss Louisa
 McGeoch, W. Stanley
 McKeil, Miss Jessie
 Meriam, Miss Effie J.
 Mills, Mrs. Jeannette R.
 Mitchell, Miss Elizabeth L.
 Moore, Miss Ella F.
 Moreland, Miss Mary L.
 Morse, Miss Nannie M.
 Morse, Miss Mary E.
 Murdock, Mrs. Lucretia Y.
 Norris, Mrs. Chas. S.
 Ordway, Miss Myra A.
 Owen, George A.
 Packard, Miss Helen M.
 Parker, Mrs. Anna E.
 Partridge, Miss Deborah A.
 Patterson, Miss Etta M.
 Peabody, Daniel D.
 Pease, Miss Alice N.
 Peppard, Miss Augusta
 Phelps, Miss Emily E.
 Pike, Arthur G.
 Pike, Miss Emily C.
 Pike, Miss Sarah A.
 Pike, Mrs. Azelia M.
 Platts, Mrs. Annie M.
 Plummer, Mrs. Amanda H.
 Prescott, Miss Emma L.
 Price, Miss Lotta A.
 Purington, Miss M. Emma
 Pynchon, Mrs. Charlotte E.
 Radford, Mrs. Anna M.
 Randall, Mrs. Lucy A.
 Ranger, Mrs. Mary A.
 Ray, Miss Hattie C.
 Richardson, the Rev. W. N.
 Richardson, Mrs. Helen L.
 Richardson, Mrs. Mary A.
 Richardson, the Rev. W. G.
 Ring, Miss Martha D.
 Robinson, Mrs. J. G.
 Rockwood, Miss Susie A.
 Rodliff, Miss Anna I.
 Rolfe, Mrs. Helen M.
 Rooke, Mrs. Emma E.
 Ross, William E.
 Ross, Miss Helen V.
 Ruggles, Miss Olive
 Ryan, Miss Mary E.
 Safford, Mrs. Henry G.
 Safford, Miss Eliza
 Sargent, Mrs. Hannah E.
 Scales, Miss Sarah E.
 Severance, Miss Millie I.
 Shattuck, Miss Clara L.
 Sherman, Mrs. Clara A.
 Sill, Miss Frances A.
 Skene, the Rev. George
 Skinner, Miss Mary S.
 Skinner, Miss Maria S.
 Skinner, Miss Abbie A.
 Smith, Miss Effie
 Spalding, Mrs. Edward L.
 Sprague, Miss Flora H.
 Stafford, Mrs. B. F.
 Stanley, Mrs. Susan C.
 Stevens, Ira W.
 Stone, Henry R.
 Stone, Mrs. H. H. P.
 Stone, Miss Ellen K.
 Struthers, Miss Mary S.
 Sykes, Miss Jennie E.
 Taylor, Mrs. Marie E.
 Taylor, Miss Nellie M.
 Thayer, Mrs. Mary E.
 Thing, Miss Addie L.
 Thompson, Mrs. Helen A. B.
 Thompson, Mrs. Lydia M. E.
 Thompson, Mrs. Mary C.
 Thurber, Mrs. Lizzie M.
 Trask, Robert D.
 Trask, Mrs. Achsa E.
 Traversee, Mrs. Marietta
 Traversee, Miss Mary E.
 Trow, Miss Lizzie F.

Varnum, Miss Hannah
 Wadsworth, Miss Jennie E.
 Walker, Jefferson C.
 Warren, Mrs. M. W.
 Watson, Mrs. Thomas A.
 Wentworth, Mrs. A. L.
 Wheeler, Miss Lizzie J.
 White, Mrs. Emma C.
 White, Miss Ellen M.
 Whitney, Mrs. Ella M.
 Whitney, Mrs. F. W.
 Whitney, Miss Nellie S.
 Willey, Miss Nellie M.
 Williams, Charles W.
 Williams, Albert P.
 Wilson, Miss Emily J.
 Wood, Miss Alice A.
 Woodbury, the Rev. Webster
 Woodbury, Mrs. Webster
 Woodward, Miss Clara O.

Morton, Jas. H.
 Porter, Miss Ida A.
 Scranton, Miss Emma A.
 Seward, Miss Hattie E.
 Smith, Miss Lillian B.
 Stanton, Miss Julia E.
 Stone, Mrs. Sarah A.
 Sturtevant, Mrs. Annie E.
 Treat, Miss Susie C.
 Treat, Miss Emily A.
 Underwood, Miss Clara B.
 Underwood, Mrs. Clara A.
 Vail, Miss Nellie E.
 Warriner, Charles H.
 Whitmore, Miss Clara L.
 Witter, Miss Ruth
 Wooster, Mrs. Kate A.

New York.

Adams, Miss Valeria N.
 Allen, Miss Susie
 Allen, Miss Mary E.
 Allen, the Rev. Walter O.
 Andrews, Mrs. Annie M.
 Anoski, Miss Rose L.
 Atchinson, Miss Harriet L.
 Babcock, Miss Mary F.
 Bailey, Miss Carrie A.
 Baker, Mrs. E. J. L.
 Baldwin, Miss Frances A.
 Baldwin, Clair H.
 Barbour, Miss Mary E.
 Barker, Miss S. Emma
 Barnes, Miss Alice E.
 Bartholomew, Mrs. Tillie C.
 Baxter, Miss Helen A.
 Benedict, Mrs. Calphurnia N.
 Benjamin, Miss Nettie D.
 Bennett, Edward N.
 Bickley, Mrs. Lizzie H.
 Biddle, the Rev. William T.
 Billings, Mrs. Mary S.
 Bliss, Miss Nettie G.
 Bond, Miss Bessie
 Bourne, Miss Elma A.
 Brainard, Miss Emma C.
 Briggs, Miss Carrie E.
 Brown, Mrs. Esther E. C.
 Brown, Miss Elizabeth
 Brown, Miss Helen
 Brown, Mrs. J. S.
 Brown, Miss Teresa
 Brown, Miss Alice J.
 Brown, John S.
 Brown, Mrs. Helen M.
 Brown, Miss Edith M.
 Brown, Mrs. C. K.
 Buell, Miss Elizabeth C.
 Camp, Miss Elizabeth B.
 Carpenter, Miss Hannah M.
 Carr, Miss M. Jennie
 Carson, Mrs. Charles H.
 Carter, Miss Maggie A.
 Cash, Mrs. Adella
 Caswell, Miss Hattie C.
 Chapin, Miss Ida E.
 Chappell, Mrs. Hattie F.
 Clark, Charles E.
 Clark, Miss Delia H.
 Clark, Edwin J.
 Clark, Lizzie
 Clark, Miss Mary W.
 Clinton, Miss E. Eloise
 Coe, Miss Lottie A.
 Colby, John E.
 Colby, Mrs. Lucy J.
 Cook, Mrs. Mary D.
 Cowles, Miss Kittie M.
 Coy, Mrs. W. Henry
 Crane, Edward J.
 Crannell, Miss Julia W.
 Curtis, Mrs. Julia M.
 Curtis, Miss Fanny
 Dailey, Charles J.
 Dearstyn, Miss E. Louise
 Dempster, Mrs. Mary J.
 Deverell, Miss Sarah A.

Rhode Island.

Aldrich, Mrs. Marcia A.
 Aldrich, Mrs. David L.
 Armington, Miss Harriet A.
 Barber, Miss Arabel E.
 Barney, Mrs. Sarah F.
 Brownell, Miss Ella W.
 Dexter, Mrs. W. W.
 Fiske, Dr. Elmer S.
 Fitz, William E.
 Goodier, the Rev. Erastus W.
 Goodier, Mrs. Lizzie M.
 Kendall, Miss Emma F.
 Kendrick, Mrs. Phebe E.
 Kendrick, John E.
 Langworthy, Miss Hattie G.
 Leavitt, Mrs. Abbie G.
 Leavitt, Miss Charlotte E.
 Lee, Mrs. Nellie
 Lewis, Miss Eugenia L.
 Mason, Mrs. Ella K.
 Nason, Mrs. Medora T.
 Nye, John M.
 Nye, William H.
 Owen, Miss Hannah A.
 Paine, Miss Lydia A.
 Potter, Mrs. Sarah M.
 Puffer, Mrs. Emma L. S.
 Steere, Miss Rachel
 Stevens, Miss Mary
 Sullivan, James J.
 Vars, John
 White, Miss Ella E.

Connecticut.

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 Bradley, Miss Sarah L.
 Brewer, Miss Ellen M.
 Bridge, the Rev. Wm. D.
 Bridge, Mrs. Mary S. H.
 Buffett, Miss Mary E.
 Bushnell, Miss Sarah M.
 Bushnell, Mrs. Margaret A.
 Caulkins, Miss Abbie A.
 Cowles, Miss Catherine M.
 Cowles, Miss Elizabeth A.
 Davies, John C.
 Davies, Mrs. Lois F.
 De Forest, Miss Emily M.
 Fenn, Willis I.
 Fowler, Miss Hattie E.
 Gilbert, Miss Anna L.
 Gillespy, Miss Estelle
 Griswold, Miss Corinth
 Harrison, Oscar G.
 Hawley, Miss Mary F.
 Huntington, Frederick L.
 Hurd, Wilbur F.
 Jones, Mrs. Andrew F.
 Kirtland, Miss Grace E.
 Lathrop, Mrs. R. S.
 Loomis, Miss Jane E.
 Lowry, Miss Minnie B.
 Merriam, Mrs. Etta M.

Dobbin, Miss Lizzie G.
 Donaldson, Mrs. Mary F.
 Douglass, Miss Martha B.
 Driver, Mrs. Ida M.
 Dunn, Miss Mary S.
 Durfee, Miss Annie E.
 Edge, Miss Elizabeth
 Edmonds, Miss Lottie E.
 Ellis, Miss Jennie L.
 Farman, Miss Mattie E.
 Fisher, Edward L.
 Fisher, Miss F. Eugenie
 Fletcher, Miss Minnie A.
 Foote, Miss Ellen E.
 Foote, Miss Frances A.
 Fox, Miss Rosalie M.
 Frost, Miss Libbie E.
 Gail, Mrs. Henrietta S.
 Gammans, Mrs. Etta B.
 Gaston, Miss Mary C.
 Gere, Justus T.
 Gillespie, Miss Emily T.
 Gillespy, Miss Edith
 Graybiel, Miss Sara N.
 Green, Mrs. Carrie A.
 Greene, George E.
 Greene, Miss Emma C.
 Gregory, Miss Libbie
 Griffin, Miss Olivia A.
 Gunton, Mrs. Henrietta M.
 Hahn, Miss Hattie E.
 Hampton, Miss Jennie S.
 Handshaw, James E.
 Hannum, Mrs. Ida
 Harrington, Miss Sarah D.
 Harrington, Mrs. Adelaide L.
 Harris, Miss Lucinda
 Hartwell, Miss Mary H.
 Hathorn, Ira B.
 Haviland, Mrs. C. W.
 Hawley, Miss Mary T.
 Hearn, the Rev. George
 Hendrickson, Mrs. Adeline
 Highriter, Miss F. Maria
 Hitchcock, Mrs. Mary E.
 Holden, Alexander M.
 How, George V.
 Hope, Mrs. Mary B.
 Hopkins, Miss Susie C.
 Hopkins, Miss Annie W.
 Hopkins, Miss Hattie E.
 Houck, Miss Kate A.
 Huff, Mrs. Anna E.
 Hull, Miss Eliza J.
 Hunsicker, Miss Ida M.
 Ingraham, Miss S. E.
 Ipsen, Miss Alicia L.
 Jenks, Miss Mary E.
 Johns, Miss Dora
 Johnson, Mrs. S. Lizzie
 Jones, Miss Cora M.
 Judd, Mrs. Ellen M.
 Kellogg, Miss Lottie R.
 Kendall, Miss Clara E.
 Kent, Miss Annabelle
 Kibbey, Mrs. Louisa
 Kibbey, Samuel
 King, Mrs. Olie C.
 King, Clarence
 Kinsley, Fred. A.
 Kinsman, Miss Jeannie E.
 Kipp, Miss Alice R.
 Knight, Miss Jane
 Labagh, Miss Maria C.
 Lamson, Miss Eva S.
 Lapham, Mrs. Geo. P.
 Lathrop, Miss Carrie
 Lathrop, Miss Ella M.
 Latimer, the Rev. E. Herman
 Lent, William J.
 Loveridge, Miss Grace C.
 Luther, Stephen
 Lyon, Miss Mary L.
 Mackey, Miss Florence A.
 Mallette, Miss Mary E.
 Manrow, Milton
 Marley, William J.
 Mathews, Mrs. Candace P.

Matthews, Andrew J.
 Melven, Emmett S.
 Miller, Charles E.
 Milliman, Robert L.
 Milliman, Mrs. Susan F.
 Miner, George G.
 Mogg, Mrs. Jennie A.
 Moore, Mrs. Philena B.
 Morrison, Miss Mary L.
 Morrison, Miss Emma F.
 Martin, Wilbor A.
 Newton, Miss Lura
 Nichols, Miss Nancy M.
 Noble, Miss Grace A.
 Northup, Miss Ella A.
 Ogden, Mrs. Florence W.
 Olney, Miss Minnie M.
 Parker, Mrs. Sabine E.
 Parmelee, Miss Lizzie F.
 Pease, Miss Ettie E.
 Phyfe, Archibald B.
 Pindar, Miss Rose E.
 Pond, Miss Martha
 Pratt, Miss Lettie C.
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 Rice, Mrs. Maggie C.
 Rice, Mrs. Clara E.
 Rockwell, Mrs. Ada E.
 Rockwell, the Rev. Lyman E.
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 Rowell, Miss Ida E.
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 Sanford, Miss Frances E.
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 Schellinger, Miss M. Amelia
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 Silliman, Miss Mary A.
 Simmons, Mrs. Jennie E.
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 Slada, Miss Mary M.
 Slattery, John T.
 Sleeper, Charles W.
 Smallbone, Miss Emma J.
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 Sotham, Miss Mary E.
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 Spooner, Mrs. Lina A. H.
 Stanley, Miss Jennie B.
 Stevens, Mrs. Jennie
 Stilson, Miss Alice M.
 Stone, Miss Nellie M.
 Stone, Miss Addie H.
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 Terry, C. L. Emory
 Tompkins, Mrs. Elizabeth S.
 Torr, Miss Lizzie E.
 Torry, Miss Grace
 Trowbridge, Miss Helen R.
 Trowbridge, Miss Augusta E.
 Vail, Mrs. Horton
 Vail, Horton
 Van Cruyningham, Daniel
 Van Cruyningham, Mrs. M. E.
 Van Ness, Miss Lottie R.
 Viele, Miss Ada L.
 Wadsworth, Mrs. Carrie K.
 Walley, William
 Warner, Mrs. Jane R.
 Weimert, Miss Kittie
 White, Mrs. Harriet H.
 Wight, Miss Martha A.
 Williams, Mrs. Franc S.
 William, Miss Emma J.
 Williamson, Matthew D.
 Willis, Mrs. C. C.
 Willis, Charles C.
 Winspear, Miss Clara J.
 Wood, Mrs. James M.
 Wood, Miss Lizzie
 Wooden, Miss Emily S.
 Wooden, Miss Loretta E.
 Wooden, Miss Laura E.
 Westcott, Mrs. Addie L.

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 Delano, Miss Laura C.
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 Fortner, Miss Sarah E.
 Gokey, Miss Delia
 Hall, Miss Helen F.
 Hedden, Mrs. L. O.
 Hoemer, George P.
 Holbert, Mrs. Frances B.*
 Huyler, Adam
 McKay, Mrs. Mary H.
 Mead, Miss Margaret H.
 Morehouse, Miss Hattie A.
 Norris, Miss Alice L.
 Parker, Ellis
 Peet, Dr. Gilead
 Riker, Miss Grace H.
 Rittenhouse, Miss Ada F.
 Rogers, Miss Hannah D.
 Smith, Miss Abbie T.
 Spring, Edward A.
 Stevenson, Miss Georgiana
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 Weeks, Miss Mary F.
 Wegmann, Miss Bertha B.
 Woolston, Miss Ray B.
 Woolston, Miss Beulah D.

Pennsylvania.

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 Alcorn, Miss Alice M.
 Allen, Elisha M.
 Allison, Miss Louisa
 Arnett, Miss Aroline
 Baker, Miss Ida A.
 Bar, Miss Irene
 Beatty, Mrs. Agnes B.
 Beatty, Mrs. Julia S.
 Beers, Mrs. Celia H.
 Bethune, John T.
 Bolard, Mrs. Jennie E.
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 Braham, Miss Isabella H.
 Brisbin, Miss Florence
 Buchanan, Mrs. M. Josephine
 Buehler, Mrs. Anna F.
 Burrows, Mrs. Lizzie M.
 Cernea, Miss Anna T.
 Clark, Norman H.
 Closson, James H.
 Clark, Mrs. Harriet R.
 Cooke, Mrs. Cordelia H.
 Copeland, Miss Irene
 Copeland, J. Renwick
 Cox, Miss Ettie A.
 Crosby, Miss Lizzie C.
 Dale, Mrs. Elizabeth C.
 Dampman, Miss Lizzie B.
 Davidson, Miss Anna
 Dewey, Mrs. Martha J.
 Dickinson, Levi S.
 Dickson, Miss Maggie A.
 Dorand, Miss Emma A.
 Du Bois, Mrs. Ella R.
 Dunham, Mrs. Helen
 Eaton, Mrs. S. J. M.
 Ely, Miss Alice K.
 English, Miss Ellen R.
 Evans, Miss H. Louise
 Farley, Mrs. H. N.
 Fellows, Mrs. Sarah
 Findlay, Peter
 Finley, Miss May A.
 Fishburn, Miss Lizzie E.
 Fisher, Miss Mate E.
 Frescoln, Oscar P.
 Frew, William A.
 Frysinger, Edward
 Furst, Miss M. Katie
 Gail, Miss Emma B.
 Gardner, Lot
 Gerould, Miss Flora E.
 Gyger, Miss Hannah
 Harris, Edward F.
 Henry, Miss Elizabeth
 Hill, Miss Zelia
 Hill, Miss Ella
 Hill, Miss Mattie J.
 Horner, Miss Mary A.
 Hostetter, Miss Venetta E.
 Howe, Miss Cora
 Hubbard, Miss Mary A.
 Humphriss, Mrs. Mary I.
 Hunter, Le Roy M.
 Ingram, Miss Almeda R.
 Jackson, Mrs. Amanda A.
 Jones, Harry L.
 Kelly, Miss M. Emma
 Ladd, Miss Anna A.
 Lawrence, James A.
 Leavitt, Mrs. Walter
 Little, Miss Ettie E.
 Love, Miss Myrtle L.
 Marsh, Mrs. G. D.
 Marsh, George D.
 Mason, Edwin T.
 McElroy, Mrs. Jennie
 McFarland, Mrs. Caroline
 McIntire, Miss Annie M.
 Miller, George W.
 Miller, Miss Emily A.
 Moford, Miss H. Mary
 Morrow, Miss Mary B.
 Myton, Thomas W.
 Neal, Mrs. H. N.
 Nevin, Miss Laura
 Oglevee, the Rev. Jesse A. B.
 Oudry, Miss Katie E.
 Paxson, Miss Sallie B.
 Pearson, Miss Hulda A.
 Pettit, Miss Harriet L.
 Purdy, Mary E.
 Reineke, Miss Carrie W.
 Reineke, Miss Minnie E.
 Renn, Miss Jennie W.
 Ross, Mrs. Mary M. F.
 Rowland, Frank S.
 Sabin, the Rev. Edward N.
 Sammons, Miss Fannie B.
 Sammons, Miss Martha L.
 Sargent, Mrs. R. H.
 Schooley, Miss Jennie C.
 Scott, Miss Mary I.
 Scott, Albert O.
 Scott, Frank H.
 Selkregg, Mrs. I. V.
 Sheldon, Willard M.
 Siegfried, Miss Stella
 Smith, Miss Clara L.
 Smith, Christopher W.
 Smith, Miss Emma C.
 Smith, Miss Kate F.
 Smith, Mrs. Lou M.
 Smith, Miss Ella M.
 Smith, Mrs. Annie M.
 Spaulding, F. W.
 Starkweather, Miss Arvilla H.
 Steele, Herbert
 Stoever, Mrs. Laura M.
 Stoever, Miss Sue E.
 Stone, Mrs. C. E.
 Straub, Miss Effie T.
 Strong, Mrs. Mary A.
 Strong, Henry A.
 Tracy, Mrs. Edith E. P.
 Tracy, Mrs. Malie
 Tracy, Malie
 Trosh, Nathaniel F.
 True, Miss Mary E.
 Tryon, Mrs. George W.
 Tryon, Miss Arabella
 Thomas, Miss Ada F.
 Warner, Mrs. A. A. H.
 Wilson, Mrs. Ida G.
 Wood, Collin

Delaware.

Cahall, Joseph L.

Maryland.

Bayne, Lawrence P.
Markell, Miss Virginia H.
Parkhurst, Miss Alice S.
Rawlings, Joshua S.
Rodgers, Mrs. Amy C.
Sadtler, Miss M. Adelaide
Smyth, Miss Lizzie K.

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Darby, Miss Susan C.
Dudley, Frederick E.
Hall, Mrs. Jennie B.
Johns, Miss Jessie C.
McKinney, Miss Mary E.
Mecham, Miss Annie M.
Nalle, Mary
Parke, Miss Caroline E.
Patterson, Miss Emma
Pumphrey, Miss Cora A.

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Hatcher, Mrs. Charles

West Virginia.

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Cloan, Miss Elizabeth
Forman, Israel
Fowler, Miss Emma A.
Glass, Miss Annie V.
Pierpoint, Miss A. Pierre
Repetto, Miss Mary D.
Riheldaffer, the Rev. Wm. G.
Turner, Miss Adela

North Carolina.

Small, the Rev. J. B.

South Carolina.

Harris, Mrs. Kittie S.

Kentucky.

Cox, Miss R. Aussie
Cragg, Mrs. Mattie
Gunn, Miss Frances A.
Heazlitt, Clarence W.
Ruttle, Miss Eliza J.
Winall, Miss Vina
Winall, Miss Belle
Winall, Miss Eva

Tennessee.

Allen, Mrs. Mattie E.
Bain, Daniel Hiram
Fleece, Mrs. Mary T.
Scott, F. N.
Shearer, J. L.
Tadlock, Mrs. Clara M.
Thomas, Miss Anna W.
Treadwell, Miss Annie D.

Arkansas.

Allen, Everett F.
Colwell, Mrs. Emma R.
Lyon, Miss Hattie J.
Vaughan, Mrs. Myra

Louisiana.

Armstrong, Miss Frances L.

Georgia.

Brooks, Miss Addie M.

Steele, Miss Carrie J.
Thompson, Miss Mary H.

Alabama.

Kennedy, Miss Annie
Leslie, Mrs. Sara McC.
Watkins, Mrs. Lizzie E.

Mississippi.

Moore, Miss Cora L.
Parker, Mrs. Bettie
Row, Miss E. Evelyn
Steele, Dr. N. C.
Townes, Miss Julia G.
Winter, Miss Kate E.

Ohio.

Aldcroft, Miss Ella
Alexander, Miss Cora E.
Allan, Miss Nellie
Alward, Miss Alice J.
Armstrong, Mrs. Mary H.
Armstrong, Mrs. Permelia B.
Austin, Miss Florence
Barnett, Miss M. Alma
Beiler, the Rev. Samuel L.
Beiler, Mrs. Anna F.
Bell, Mrs. Alice
Bell, J. W.
Beyerly, Mrs. Julia H.
Binkley, Miss Laura A.
Brown, Mrs. J. H.
Bunker, Miss Stella N.
Bunker, Miss Clara
Burge, Miss Zelma
Burner, G. Washington
Burt, Mrs. Nellie C.
Burt, Miss Harriet C.
Caldwell, Mrs. Sarah E.
Cameron, Miss M. Amelia
Chamberlain, Miss Fanny P.
Chamberlain, Charles W.
Chamberlain, Mrs. Charles W.
Chancellor, Mrs. Lida B.
Chandler, Miss Anna
Chidlaw, Miss Mary I.
Clemans, the Rev. Francis M.
Clemans, Mrs. Sarah I.
Colby, the Rev. Henry F.
Crossley, Mrs. Cecelia S.
Dayton, Mrs. James
Deming, Miss Sophronia O.
De Veny, Miss Belle M.
Dietz, Will. C.
Dimmick, Mrs. Hannah A.
Elcock, Miss Lucy A.
Facer, Miss Fannie R.
Faulkner, Mrs. Amelia H.
Ferriss, Frank E.
Freeman, Mrs. Mary E.
Fries, Miss Emmabel
Gee, Samuel A.
Giboney, Mrs. S. H.
Goodrich, the Rev. Ira B.
Goodrich, Mrs. Adaline C.
Gough, Mrs. Sadie H.
Graffing, John C.
Guthrie, Miss Sarah I.
Haight, Miss Louise J.
Hammond, Mrs. Mary W.
Hankins, Mrs. Mary J.
Hart, Miss Mary P.
Hayward, Miss Josephine A.
Hicks, Miss Bella C.
Highlands, John S.
Hinckley, Mrs. Augusta V.
Hine, Mrs. Mary A.
Humphrey, Dr. Elwin
Hussey, Elroy E.
Kattenhorn, Miss Mary
Kattenhorn, Miss Ella
Keagey, Miss Carrie L.
Kellogg, J. A.
Kelly, Mrs. Carrie M.
Kidder, Miss Mary I.
Lee, Mrs. Dr. E. B.
Loomis, Mrs. Letitia E.

Loomis, Elisha S.
Loudin, Mrs. Harriet C.
Mann, Miss M. Maud
Mansfield, Mrs. Howard
March, Miss Lizzie G.
McFarland, Mrs. Mary D.
McKittrick, Mrs. Addie A.
Minor, Mrs. J. A.
Moore, the Rev. John W.
Morse, Miss Belle G.
Morgan, Mrs. Mary D.
Morgan, Miss Lizzie
Munson, Miss Nellie
Murphy, Miss Marian A.
Nash, Miss Harriet A.
Parish, Miss Nettie A.
Park, Mrs. Maria B.
Park, Mrs. J. D.
Parmelee, Mrs. Anna J.
Parsons, Mrs. Lucinda M.
Parsons, Mrs. Josie L.
Patten, Charles E.
Pearce, Miss Selina P.
Pickett, Daniel D.
Powers, Miss Minnie
Randall, Mrs. Rebecca R.
Reed, Miss Myrta
Reed, Cornelius A.
Rice, Miss Frances M.
Richards, Miss Emily S.
Robison, Miss Kate R.
Ruckenbrod, Miss Maggie
Saumenig, Miss Emily B.
Schenck, Miss Claribel
Scott, Miss Katie
Scott, Miss Fannie
Sherrard, Walter P.
Shields, Miss Sarah E.
Sloane, Miss Jeannette M.
Smith, Miss Ione L.
Smith, Miss Mary I.
Snyder, Franklin E.
Spillard, Mrs. Willa H.
St. John, Mrs. M. P.
Taylor, Mrs. Annette H.
Taylor, Miss Ellen E.
Taylor, Royal
Thompson, Mrs. Ella P.
Thorne, Miss Lizzie B.
Trotter, Miss Sarah
Walker, Mrs. Mary P. S.
Walker, Miss M. Augusta
Webb, Mrs. Dora V.
Wheelock, Mrs. Estelle C.
White, Miss Jennie
White, the Rev. Levi
White, Miss Fannie E.
Whipple, Mrs. J. C.
Wilcox, Mrs. Hannah E.
Williams, Miss Etta C.
Willis, Miss Laura B.
Winter, Mrs. Laura C.
Winter, the Rev. William W.
Young, Miss Mary E.
Zartman, Miss Essie H.
Zuck, the Rev. William J.
Zuck, Mrs. Jessie M.

Indiana.

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Berg, Mrs. Mattie V.
Bettis, Mrs. Mary P.
Boughman, Melancthon A.
Bowen, Miss Loretta V.
Busick, Mrs. Kate M.
Clark, Miss Florence
Crawford, Mrs. Jennie R.
Daggett, Miss Angelia
Denison, Mrs. Aurilla A.
Dunn, Temple H.
Ellis, Miss Grace
Fitch, Miss Ida A.
Fosdick, Miss Sophie H.
Fosdick, Benajah S.
Foster, Miss Madge
Francis, Mrs. May

Gooding, Mrs. Mary M.
Goodman, Miss Clara M.
Hackleman, Miss Indiana
Hagenbook, Allen M.
Hammond, Mrs. Angie L.
Harter, Miss Mary C.
Hascall, Miss Julia E.
Hedden, Miss Theodosia E.
Howard, Mrs. Cinderella J.
Hudson, Mrs. H. S. B.
Jackson, Miss Nellie M.
Jamieson, Mrs. Hattie H.
Jones, Miss S. Ella
Kauffman, Jacob S.
Lambert, Miss Lottie A.
Lambert, Miss Tillie
Lesley, Mrs. Edith
Matheny, Miss Eva
Matheny, Miss Mattie
Maxwell, the Rev. John A.
Maxwell, Mrs. Alice W.
McCauley, Miss Rose
Milburn, Miss Nellie F.
Mitchell, Miss Marcia
Moffit, Mrs. Rebecca A.
Morrill, Miss Annie
Morse, Mrs. Florence S.
Newhouse, Mrs. Mary R.
Ogg, Robert A.
Ogg, Mrs. Louise H.
Perkins, William H.
Pickett, Miss Ella M.
Power, Miss Ella
Powers, Mrs. R. B.
Ratliff, Dr. Barclay
Roberts, Mrs. Lizzie M.
Robertson, Miss Margaret
Robinson, Mrs. Elvira T.
Sabine, Miss Nettie W.
Semans, Mrs. Sarah W.
Sexton, Miss Ruby
Shane, Miss Lizzie
Smith, Miss Lilian G.
Smith, Miss Laura
St. John, Hermon F.
Stoy, Mrs. L. R.
Swope, Mrs. Mary E.
Taylor, Miss Emily
Towers, Mrs. Bel K.
Town, Mrs. Laura L.
Town, the Rev. Salem B.
Townsend, Mrs. Elizabeth B.
Vail, Mrs. Arvilla Z.
Wilkes, John H.
Wilmuth, Mrs. Lydia P.
Zent, Miss Ida M.

Illinois.

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Black, Mrs. Addie L.
Blake, Miss Ellen M.
Blakeway, Miss Ada M. A.
Blakeway, Miss Ella R. M.
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Brown, Mrs. Mary L. S.
Burpee, Miss Minnie L.
Chamberlain, Miss Orra N.
Colby, Mrs. Mary A.
Conley, Mrs. V. C. M.
Day, Miss Clara C.
Douglass, Miss Alberta N.
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Eastburn, Mrs. Dora M.
Enoch, Miss Emma A.
Fairbanks, John
Fairbanks, Mrs. Carrie H.
Gay, Miss Hannah P.
Gregory, Mrs. Sue F.
Gridley, Mrs. Annah B.
Gunn, Miss Jessie
Hanaford, Mrs. Melvina
Hart, Mrs. Ida B.
Hart, Samuel R.
Harvey, Mrs. Lucia M.
Hayes, Mrs. Dr. R. F.
Holmes, Mrs. Melanie G.

Kay, Mrs. Ella M.
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Mayo, Miss Carrie P.
McMurray, Miss Mary E.
McReynolds, Mrs. Abbie M.
McSween, Mrs. Helen
Mitchell, Walter
Moir, Mrs. Jessie G.
Moore, Mrs. Stata M.
Norris, Mrs. Nellie R.
Overman, Miss Myra
Palmer, Mrs. Mary E.
Pells, Miss Louise
Pickering, Mrs. Ida O.
Price, Miss Jennie
Rea, Mrs. Lucia G.
Read, Mrs. Frank
Rinaker, Mrs. Clarissa K.
Robinson, Miss Bessie M.
Rowland, Mrs. Hattie W.
Scott, Miss Kate M.
Scoggin, Miss Libbie
Spear, Mrs. Mary E.
Sprouse, Miss Jennie G.
Swanzy, Miss Clara J.
Tunnichiff, Mrs. Sarah A.
Turnbull, Mrs. Lizzie E.
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Walker, Mrs. D. T.
Wallace, Mrs. J. F.
Willey, Mrs. Agnes H. C.

Michigan.

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Barrows, Mrs. Agnes C.
Bedell, Mrs. Mary B.
Benjamin, Miss Lillian
Benjamin, Miss Anna
Benjamin, Mrs. M.
Borden, Miss Harriet E.
Brown, Miss Kate
Brown, Miss M. Viola
Chapman, Mrs. Olivia E.
Churchill, Miss Frances A.
Clark, Mrs. Ettie A.
Clay, Mrs. Hattie E.
Coe, Miss Lovisa M.
Cooley, Miss Mary L.
Cooley, Miss Lottie I.
Coville, Mrs. Mary E. H.
Field, Miss Dencie L.
Flewelling, Mrs. F. E.
Frost, Mrs. Nellie J.
Furman, Mrs. Libbie T.
Gannon, Joseph M.
Goodyear, Mrs. Emma J.
Hill, Frank J.
Hills, Mrs. Mary M.
Holmes, Mrs. E. F.
Hoover, Miss Cora J.
Hough, Mrs. Tena W.
House, Dr. Robert B.
Johnston, Miss Janet H.
Kent, Mrs. Clara E.
Lathrop, Mrs. Chas. A.
Lilley, Miss Mary A.
Lincoln, Charles A.
Lincoln, Mrs. M. J.
Love, Miss Sara
Lutze, Mrs. Mary M.
McCartney, Mrs. F.
McDonald, Miss Anna
McElwee, the Rev. Samuel J.
McElwee, Mrs. Anna B.
Mellen, Miss Ellen E.
Pack, Miss Josephine
Paton, Mrs. Sarah B.
Pearce, Miss Abbie
Peacock, Miss Frances E.
Owen, Miss Lucy A.
Perrin, Mrs. Henry W.
Pickell, Mrs. C. W.
Queal, Miss Helen
Ramsay, Mrs. W. W.

Roe, Miss Genevieve B.
Russell, Miss Nellie J.
Sinclair, Miss Jane S.
Smith, Miss Lora A.
Spangler, Mrs. W. P.
St. John, Mrs. Etta
Stocum, Mrs. C. W.
Switzer, Mrs. Anna M. L.
Van Fleet, Miss Mary E.
Van Slyke, Miss Julia
Wilcox, Mrs. Martha H.
Wilks, Mrs. Emily M.
Wolf, Miss Anna E.
Wilcox, Joshua L.

Wisconsin.

Algard, Mrs. Phebe M.
Baker, Miss Eva J.
Bovee, Mrs. Victoria
Chase, Miss Hattie
Coleman, Mrs. Edwin
Dougherty, Miss Nettie M.
Gates, Miss Laura
Grannis, Mrs. E. H.
Holden, Mrs. Hattie L.
Hooley, Miss Emma E.
Kennedy, Miss Catherine
Kutchin, Mrs. Hattie S.
Lucas, Miss Stella
McLean, Mrs. M. F. K.
Oddy, Mrs. Lydia A.
Shepard, Mrs. Mary S.
Shumway, Mrs. Clara E. C.
Steele, the Rev. John
Wheeler, the Rev. Bert E.
Wick, Gustave

Iowa.

Banta, Mrs. Lillie E.
Bell, the Rev. William E.
Benedict, Miss Ella G.
Bennett, Mrs. Lizzie
Brindell, Mrs. Anna R.
Brown, the Rev. Henry
Buckley, Miss Eunice L.
Clarke, Mrs. Kate F.
Cort, the Rev. William C.
Cutter, Miss Valona J.
Day, Mrs. Eliza C.
Gaylord, Mrs. Mary J. L.
Greene, Miss Hattie
Harvey, Miss Carrie L.
Hooley, Miss Annie J.
Hooley, Miss Mattie F.
Huston, Mrs. Mary S.
Hyde, Miss Maie E.
Jones, Mrs. R. D.
Keen, Mrs. Mary T.
Key, Mrs. Sarah
Kellum, Miss Alma J.
Louthan, Mrs. Florence A.
Lukens, Miss Lucie E.
Mack, Miss May
McCarn, Mrs. Carrie E.
McCartney, Mrs. Lura J.
McMeans, Miss Mattie
Melvill, Mrs. Martha E.
Millard, Miss Nellie P.
Nagel, Mrs. Sadie E.
Palmer, Miss Nirma E.
Pollock, Miss Annie L.
Ritchey, Mrs. Ella L.
Robinson, Mrs. Marianna W.
Robinson, Mrs. M. E.
Scales, Miss Lena F.
Snyder, Mrs. D. B.
Tallman, Mrs. Catharine M.
Wadsworth, Mrs. Mary B.
Wegener, Miss Alice
Wilcox, Miss Rhoda M.

Missouri.

Albin, Miss Emma C.
Allen, Mrs. N. L.
Bennett, Alfred
Exly, the Rev. Frank
Miller, Charles W.

Parker, George A.
Russell, Miss Sarah F.
Watson, Miss Eva
Wayman, the Rev. John
Sabin, L. Willis.

Minnesota.

Brannan, Mrs. Carrie M.
Cole, Miss Jennie
Jerman, Mrs. Sara M.
Mendenhall, Miss Minnie E.
Schofield, Miss Persis E.
Stone, Mrs. J. W.
Taylor, Mrs. C. W.
Terwilligar, the Rev. Michael D.
Terwilligar, Mrs. Hester A.
Viall, Mrs. Florence M.

Dakota Territory.

Garner, Jacob A.
Hoffman, Miss Lizzie C.
Moyer, Mrs. S. J.
Moyer, Sanford J.
Potter, Mrs. V. A.
Smith, Miss Maria T.
Squier, Mrs. Cora M.
Yost, Mrs. Julie H.

Nebraska.

Anderson, Mrs. Deborah L.
Dada, the Rev. William B.
Folden, the Rev. Andrew T.
Hamlin, Miss Lou E.
Howe, Miss Annette A.
Lemon, Mrs. Nora H.
Martin, Miss Nellie
Parrotte, Mrs. Mary E.
Perry, Miss Mary S.
Sargent, Mrs. Lola N.
Smith, Miss Lucy E.
Smith, the Rev. Charles L.
Warren, Miss Mary E.
Whitney, Miss Clara

Nevada.

Leete, Benjamin F.
Simpson, Mrs. Elda A.

Kansas.

Blythe, Mrs. Julia H.
Conklin, Isaac J.
Dudley, Mrs. Carrie A.
Elliott, Mrs. Mary E.
McFarland, Mrs. Tillie S.
Moll, Miss Eva M.
Moss, Mrs. Laura S.
Parker, Mrs. W. F.
Patrick, Miss Emma M.
Reed, Mrs. Emily G.
Smith, Fayette A.
Torrington, Mrs. Mary M.
Wallace, Miss Jennie
Weightman, Mrs. Annie M.

Colorado.

Crawford, Hugh C.
Freeman, Mrs. Lillie S.
Layton, Mrs. Mary E.
Lovejoy, Miss Jennie G.
McGonigal, Mrs. E. Belle
Reaugh, Mrs. Lottie E.

Idaho.

Yarington, Miss Stella

Washington Territory.

Ames, Mrs. Jennie P.
Barrow, Mrs. M. R.
Horton, Dexter
Pratt, William G.

Oregon.

Churchill, Frank H.
Grider, Mrs. Mary A.
Kern, Mrs. Sarah M. K.

California.

Anderson, Dr. C. L.
Bailey, Mrs. C. P.
Barber, Mrs. Emma F.
Baright, Mrs. Frances E.
Blake, Miss Alice S.
Brothers, Miss Carrie R.
Calhoun, Miss Clementine H.
Call, Miss Mattie C.
Call, Miss Mary A.
Carter, Miss Lou A.
Dawson, Mrs. Eloise J.
Drum, Mrs. Mary L.
Dryden, Mrs. S. Helen
Eckley, Emma
Field, Mrs. Mary H.
Franklin, Mrs. Belle O.
Frazee, Miss H. M.
Haight, Mrs. Elvira E.
Hammond, Miss Elbertina C.
Hathaway, Mrs. Alice V.
Hesser, Mrs. Mary E.
Mantz, Mrs. E. F.
McKelvy, the Rev. Charles
Mock, Miss Clara E.
Nusbaum, Mrs. Lucretia J.
Osgood, Miss Jennie
Phillips, Mrs. Hattie W.
Read, William E.
Rogers, William
Selby, Miss Mattie K. A.
Shafter, Mrs. Helen S.
Shattuck, Mrs. E. M.
Shuey, Mrs. Lillian H.
Shuey, M. M.
Thomas, Mrs. Flora M.
Thomasson, Mrs. Martha E.
Warring, Hattie B.
White, Miss Nellie F.
Whitney, Mrs. Julia A.
Wilcox, Miss Gussie M.
Wilson, Miss Mary E.

Canada.

Beer, Mrs. Rachel M. L.
Beswick, Miss Emma
Coleman, Mrs. Caroline
Collins, John R.
Courtright, Mrs. Gertrude S.
Curry, Mrs. Catharine
Dudman, Miss Sarah A.
Dunspaugh, Mrs. Leonora C.
Farquhar, Miss Mary L.
Freeland, Mrs. Andrew
Griffith, Mrs. Lucinda P.
Gurney, Edward, Jr.
Gurney, Mrs. Mary F.
Henderson, Miss Frances M.
Henderson, the Rev. William
Henderson, Miss Jennie
Hooper, Mrs. H. T.
Horsey, Miss Maria
Horsey, Miss Heppie
Jackson, Miss Eliza J.
James, David
Kerr, Mrs. Jennie
Langlois, Miss Ida M.
Leake, Miss Annie
Lemon, Miss Emily J.
Longard, Charles H.
Lucas, Mrs. Hattie J.
McDonald, the Rev. C. D.
Millar, James E.
Murray, Almey J.
Murray, Dr. Sydney S.
Orr, William H.
Platt, Mrs. Harriet L.
Scott, the Rev. Charles T.
Strickland, John R.
Thurlow, Mrs. Isaac E.
Watson, Miss Georgiana
Woodside, Mrs. Jane

Hawaiian Islands.
Coleman, Mrs. Hattie A.